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COMPUTERWORLD

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It's new, new, new at Honeywell Bull, with firm to adopt new name, market focus and commitment. Page 71.

VAX 8600s going out to pasture

BY JAMES DALY
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. will begin gradually phasing out its VAX 8600 and 8650 systems next year when the firm rolls the machines and their options over into a "maintenance-only" status, DEC has confirmed.

Final orders for the models — which were once the plums of the VAX line — will be taken May 19, and the last 8600s and 8650s will go out the door June 30, said Ken Donaghue, DEC's public relations manager for high-performance systems. Customers will be notified by mail by the end of this month.

Orders received after that time for the 4.4 million instructions per second 8600 or 6.8-MIPS 8650 will be filled by refurbished systems on a first-come, first-served basis.

"The machines have been very successful, but as new products with better technology are introduced, we feel it makes more sense to migrate our customers in that direction," Donaghue said.

Although DEC has publicly acknowledged the move, no 8600 and 8650 users contacted by *Computerworld* had heard of the development. While most expressed disappointment, none were surprised. "I don't disagree with what they're doing; I just wish they'd give us faster [lower end VAX] 6200s before they did it," said David Renaud, director of technical services at

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Big overhaul set at Prime

BY NELL MARGOLIS
CW STAFF

NATICK, Mass. — Prime Computer, Inc. will kick off the new year with a sweeping sales reorganization that could help deter hostile acquisition attempts such as the one currently being carried out by MAI Basic Four, Inc., sources within Prime told *Computerworld* last week.

Under the new game plan, Prime will fold its Prime and Computervision divisions into one fully integrated company split into three geographically organized sales units. Michael Forster, currently heading up general marketing at Prime, will head the U.S. sales unit; the Europe, Africa and Middle East unit and the Far East unit will be headed on an interim basis by

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Inside

• Stuffed-animal maker manages menagerie by computer while worldwide network has Mattel's eyes all aglow. Page 8.

OSF new-year plans: a blended interface

BY WILLIAM BRANDEL
and AMY CORTESE
CW STAFF

CAMBRIDGE, Mass. — By year's end, the Open Software Foundation will cease to be a consortium in search of an interface.

The OSF interface specification, due to be announced shortly, will combine elements of Digital Equipment Corp.'s X Window System-based user interface with Presentation Manager/X, which is an interface developed by Microsoft Corp. and Hewlett-Packard Co. for Unix, sources close to the OSF said last week. The sources added that Adobe Systems, Inc.'s Display Postscript graphical display technology will be offered as an option.

The mixture of technologies the OSF selected is critical to the group's strategy, as it will be supported with DOS, IBM OS/2, DEC VMS and Unix applications already under development. This critical mass of applications presents the OSF with a viable weapon to lure Unix users away from the opposing Sun Microsystems, Inc.-AT&T offering.

Ted Wilson, who oversees the OSF's user interface product development, confirmed that the announcement of an interface would be made by Jan. 1. But the consortium's director of development, John Paul, cautioned that although the group was close to a decision, business and licensing terms were still being worked out, and an agreement had not yet been cemented.

No NAS Unix plans

• Vendor lays off group developing mainframe version of Sun's Unix implementation. Page 6.

However, analysts briefed by OSF members said they were told that the selection had been made and that it is not likely to be changed this late in the process.

The user interface component, combined with a Unix kernel based on IBM's AIX Release 3, will constitute OSF/1, the group's first product release, which is due late next year.

MIS directors at Unix sites

Continued on page 4

Was breaking up so hard to do?

BY MITCH BETTS
CW STAFF

When AT&T's Bell System monopoly was dismembered five years ago, the conventional wisdom was that AT&T would soon rival IBM as a global computer powerhouse and the divested "Baby Bells" would be left with nothing but the dregs of telephone service.

Instead, AT&T has struggled in the computer business, and the seven regional holding companies have turned into highly profitable giants.

Indeed, each of the seven holding companies — Ameritech, Bell Atlantic Corp., Bellsouth Corp., Nynex Corp., Pacific Telesis Group, Southwestern Bell Corp. and US West — has operating revenues exceeding $7 billion, ranking AT&T and all but one of the regional holding companies among the 100 largest corporations in the world.

Postdivestiture America has also seen a few surprises. For example, the Justice Department in 1987 urged the court to relax several of the settlement's restrictions on the regional holding companies — restrictions that the Justice Department had drafted in 1982.

In another turnabout, the Bell companies are now engaged in a high-powered lobbying campaign for legislation to wipe out the court restrictions on their business ventures. In contrast, just prior to divestiture, executives of the Bell operating companies told Congress that the court-approved settlement was a good deal.

Divestiture also gave viability to firms such as U.S. Sprint Communications Co., MCI Communications Corp. and a host of smaller interexchange carriers, analysts said. The emergence of competitors to AT&T in the long-distance market has led to a vigorous battle for customers in the Fortune 500 and a relat-

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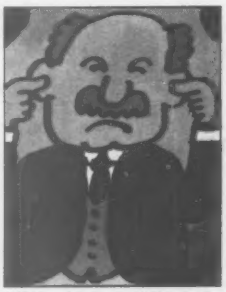

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Quotable

"It has now become quite apparent that with respect to all important indicia — price, innovation, quality and broadening of the industry's base — divestiture is fulfilling its promise."

HAROLD H. GREENE
U.S. DISTRICT JUDGE

On the fifth anniversary of the Bell System breakup. See story page 1.

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Chips coming in

Semiconductor innovations hold promise for '90s

BY CLINTON WILDER
CW STAFF

SAN FRANCISCO — Swifter, stronger — and smaller.

This is the outlook for the chips of the 1990s, according to recent breakthroughs in semiconductor technology that were announced last week by commercial vendors at the International Electron Devices meeting here.

While Texas Instruments, Inc.'s quantum-effect transistor has the most revolutionary potential, commercial users are likely to see tangible benefits much sooner from Fujitsu Ltd.'s 64M-bit dynamic random-access memory chip, which is under development.

Fujitsu said it hopes to create a prototype of the world's most dense memory chip within five years; then it will begin sample production. The 64M-bit technology will have immediate benefits for commercial users because it can be integrated into computers as currently designed.

"You don't have to redesign systems in order to take advantage of more memory," said Andrew Rappaport, president of The Technology Research Group, Inc., a semiconductor research firm based in Boston. "Many current commercial applications, like solids modeling, are currently constrained by how much data you can put in memory."

A decade off

Practical applications from TI's breakthrough, in contrast, are about 10 years away, according to the company. But the implications of the technology are staggering: quantum devices 100 times smaller and 1,000 times faster than conventional transistors.

The technology is based on the quantum mechanical, rather than electronic, movement of subatomic particles. The electrons behave like waves rather than particles, reacting to different energy levels on the chip. This eliminates the need for the tiny gates that control electron flow on conventional chips.

In another announcement at the conference, IBM said it has developed the world's fastest CMOS chip. With a switching speed of 30 billion time/sec., IBM said the CMOS device could power today's IBM Personal System/2 to run at the speed of a current IBM mainframe.

Developer wins $2.2M in Bankamerica suit

BY J. A. SAVAGE
CW STAFF

A San Francisco jury told Bankamerica Corp. last week to give software developer Gulab Tinmahan a nice Christmas present — $2.25 million.

The jury found that the bank "wrongfully exerted control" over Tinmahan's software and that its actions were "oppressive." Ironically, the one juror with technical experience, a programmer, was the sole member to vote in favor of the bank, according to Judge Frank Shaw.

Tinmahan complained in 1984 to San Francisco Superior Court that Bankamerica forced him to sign a licensing agreement in which he received no licensing fees, destroyed his source code — rendering his software unusable — attempted to frame him by electronically transferring funds in his name and destroyed his career.

The bank had argued that because Tinmahan was in its employ, the software belonged to the bank; it said the code was obsolete anyway because it was written for the IBM precursor to the System/34.

Tinmahan worked for the bank from 1976 to 1983 as a consultant — a well-paid one at that, he said: "They paid me $3,000 a month just to carry a pager." His fancy lifestyle ended abruptly in April 1983, however, when the bank barred him from the premises by "putting two security guards on me," he said.

Tinmahan said he lost his house, car and ability to pursue his work and felt so threatened that he got a license to carry a concealed weapon.

He said that he had bailed out the bank in 1980 when it was having software problems with its remittance accountant procedure system. He let the bank know that he had developed software that could help correct the problems.

In court filings, Tinmahan alleged his software allowed the bank to computerize interbank transfer collections and perform other functions it was unable to do before using his package.

"At minimum, we will file a motion for a new trial," said the bank's attorney, Frank Sommers.

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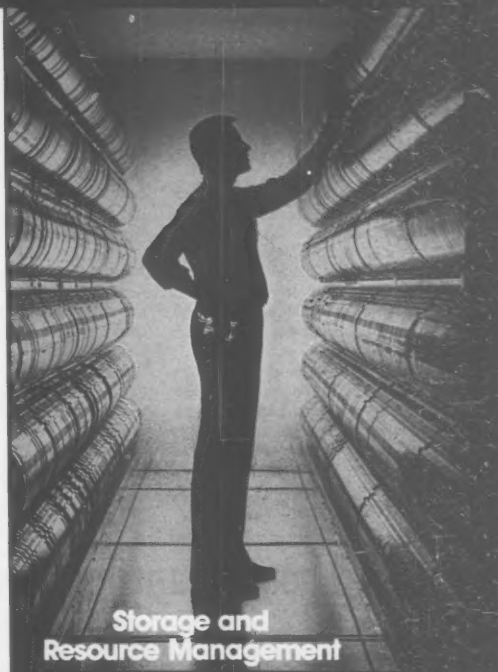

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NSA plays it safe, signs security deals

BY MICHAEL ALEXANDER
CW STAFF

The recent spate of well-publicized hacker attacks on computer sites throughout the nation is prompting some organizations, including the U.S. government, to get smart.

Last week, the National Security Agency (NSA) said it signed contracts with three companies for a security device that uses smart card technology and was designed to protect government computers containing unclassified information against hacker attacks.

The awarding of the contracts comes on the heels of several security breaches on the nationwide Internet computer network in November and December. The network links computers at corporations, universities and defense installations.

The Computer Virus Industry Association, a Santa Clara, Calif., trade group, has pegged the damage wrought by last month's worm attack on the Internet network at a staggering $98 million worth of lost machine time and manpower required to eradicate the program. The group has calculated that about 6,200 host computers were hit by the worm.

What's in the cards

A smart card is a plastic card about the same size as a credit card with a microprocessor embedded beneath its surface. The card can be used to store an infinite variety of personal data — the user's birth date, mother's maiden name and the like — as well as lengthy logon sequences and security data that can limit the user's access to some databases. The card's database can equal several pages of text.

The NSA contracts were awarded to ACS Communications Systems, Inc. in Herndon, Va., Interstate Electronics Corp. and Codercard, Inc. in Anaheim, Calif., and Pailen-Johnson Associates, Inc. in Vienna, Va. The three companies will build low-cost encryption/authentication devices, or LEADs, which will be marketed to U.S. government departments, agencies and certain contractors for about $100 each, according to the NSA.

LEADs, which can be operated only with a smart card, will be used to screen out unauthorized computer users and encrypt data transmitted on the Defense Data Network, an NSA spokesperson said.

In a trial now under way, AT&T is testing its own smart card technology to help protect its computer systems against unwanted intrusion by hackers.

To access the computer system, the user inserts the card into a reader attached to his terminal. The host system uses a complex code to validate the smart card and then asks for a password.

Grid boosts laptop drive

Grid Systems Corp. said last week that it is offering a 100M-byte Winchester disk drive option on its battery-operated Gridcase 1520 and 1530 laptop computers.

At the same time, Grid said it will enhance the LCD display to make it brighter, extend the life of the portable battery pack and offer higher performance mass storage.

A 100M-byte hard drive would be a large departure from the previous 40M-byte maximum on most laptops, Grid officials claimed. It will be teamed up with the processing power of the Intel Corp. 80C286 microprocessor in the 1520 model and the Intel 80386 in the 1530 model. The two models sell for $3,495 and $4,695, respectively; the 100-M byte drive is a $2,895 option.

The 100M-byte drive is a 3½-inch model that utilizes four disks and eight heads and has a 28-msec access time, which is an improvement over the 40M-byte drive's 78-msec access time. It can store approximately 50,000 pages of typed material.

OSF plans

CONTINUED FROM PAGE 1

welcomed the news of the selection plans. "We're looking for a standard, and this sounds like a fairly reasonable marriage," said Jack McDougal, a systems development manager at Amoco Corp. in Houston.

Another MIS director, Ed Gavalek of Duquesne University in Pittsburgh, was pleased simply because there will be a decision. "That's all that matters," he said.

Compromises

Ross Chapman, a product manager at Microsoft, confirmed that the OSF had been discussing contractual issues with HP during the past week. He also said that participants in OSF technical meetings have indicated that the decision was weighing heavily in favor of a merged Presentation Manager/X and XUI solution.

Similarly, a DEC spokesman stated that its OSF representatives have reported that a hybrid interface would be selected.

Since the formation of OSF precursor Hamilton Group in January, it has been widely anticipated that Decwindows would play a major role in the graphical user interface component.

However, Chapman pointed out that he has every reason to believe that it will be Presentation Manager/X and that he would not be surprised at the inclusion of Decwindows as a face-saving move.

The decision puts the OSF one step closer to the starting line, but the group still lags behind AT&T, which is scheduled this summer to unleash a major new version of its Unix System V that will merge the major variants of Unix.

Another timing disadvantage working against the OSF is that Unix software vendors are already developing software to exploit AT&T's proposed Open Look interface in addition to the existing cadre of Unix applications.

Reacting to the expected announcement, an AT&T spokesman downplayed the user interface decision, emphasizing the Unix kernel as most significant to the operating system. He contended that the decision will not impact Unix customers' buying decisions.

But the OSF selection may sway key software vendors that thus far are uncommitted to either Unix camp.

A Presentation Manager-like interface based on the X Window standard would bridge the Unix world with the growing base of OS/2 users by providing a consistent interface between the two environments.

Narrowing the field

Uncommitted vendors said the OSF selection will not obliterate opposing interface standards. However, the selection will pare down the number of interfaces to develop for, they said.

"The key is to be agile," said Lotus Development Corp. Vice-President of Research and Development Ed Belove.

According to Belove, the overlap that exists between high-end personal computers and workstations may create a standard that could ironically result in stealing some of IBM's and Microsoft's Presentation Manager thunder.

Senior Editor Douglas Barney contributed to this story.

Wang rolls out PCs, 800 line

BY NELL MARGOLIS
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. last week inaugurated a campaign to capture a noticeable share of the PC market with the establishment of a direct-response Microsystems Marketing Group and the addition of two models at the high end of its Professional Computer 200 and 300 series.

Slated for shipment this month, the Intel Corp. 80386-based Professional Computer 381 and 382 are both compatible with the IBM Personal Computer AT.

Aimed at the general-business market, the 16-MHz 381 will be priced from $3,195 — a 12% savings over Wang's current Professional Computer 380 for a typical configuration, according to a spokeswoman.

The 20-MHz Professional Computer 382, priced from $3,450, is targeted at graphics and communications-intensive applications.

Marketing maneuvers

Calling the new entries "good, solid products and ones that Wang really needs," marketing programs manager Valerie O'Connell said that what is really strategic is the formation of the new marketing division.

With the overwhelming number of current personal computer sales going to Wang VS minicomputer installations, the new division "was chartered to truly focus on getting Wang some presence in the PC market at large," O'Connell said.

The new group's maiden products, the PC 381 and 382, both support a variety of operating systems, including The Santa Cruz Operation's Xenix System V, Release 2.3 and Microsoft Corp.'s MS-DOS 3.3 and MS OS/2.

According to O'Connell, each machine can either run standalone applications or function as a node on either an 802.3 or 802.5 PC local-area network.

Suitably configured with the right software, either system can also serve as a Wang VS minicomputer workstation, according to the company.

CORRECTION

In the In Depth article, "Is your PC software running wild?" [CW, Dec. 5], author Irv Brownstein's biography should have also stated that he is affiliated with Howard Rubin Associates in Pound Ridge, N.Y.

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NEWS SHORTS

DEC RISC shop scuttled

Digital Equipment Corp. earlier this month canceled plans to purchase a parcel of Snohomish County, Wash., farmland to serve as a site for development of its own reduced instruction set computing (RISC) technology. The site was to provide a research and manufacturing facility for its Decwest Engineering Group. Citing a change in strategy, Decwest Engineering Group Manager Roger Heinen issued a statement reiterating the company's commitment to the state of Washington. Analysts said DEC's home-grown RISC development has been curtailed. On the other hand, the first fruits of DEC's recently announced alliance with RISC-master MIPS Computer Systems, Inc. are expected in early 1989.

IBM, M&D ink marketing pact

McCormack & Dodge Corp., based in Natick, Mass., has signed an agreement with IBM to jointly market M&D financial and human resource applications on all IBM processors. The pact increases the ties between the two companies and allows M&D to receive IBM marketing support and attend IBM user conferences. The agreement is the successor to the IBM Industry Marketing Assistance Program pacts and allows IBM to designate M&D as an Authorized Industry Application Specialist.

Developers put Openview to work

Hewlett-Packard Co. said several major vendors are developing network management applications using the HP Openview user interface. They include Fibercom, Inc. in Roanoke, Va., Ungermann-Bass, Inc. in Santa Clara, Calif., Jutland Telephone Co. in Denmark, Microtronix Systems Ltd. in Ontario, Canada, and Telindus in Brussels. Openview is based on Microsoft Corp.'s Windows and provides network managers with a standard user interface.

Australian hackers face 10 years

Convicted computer hackers may face up to 10 years in jail under federal legislation proposals from an Australian government committee. The committee has rejected advice from the office of the Director of Public Prosecutions and recommended special federal legislation to deal with intrusive hacking and other computer crimes. The Public Prosecutions office had taken a stand that legislation to deal with computer crime was not warranted and too difficult to write.

Telegraphing EDI

Western Union Corp., based in Upper Saddle River, N.J., last week introduced its electronic data interchange (EDI) service, tightly integrated with its Easylink electronic mail and packet-switching network. Western Union EDI supports ANSI X.12 and other common EDI standards, while EDI-related messages to trading partners can be sent by E-mail, the vendor said at the TDCC — Electronic Data Interchange Association's annual conference.

Big money backs Telesoft retool

Telesoft Co., a major Ada software vendor in San Diego, said it received $8.5 million from investors for a research and development program to enhance its Ada compilers and develop computer-aided software engineering tools. The investors are Paine Webber Development Corp. and Swedish Telecom. A Paine Webber official said the investment will help Telesoft expand its share of the Ada market and move into commercial MIS and on-line transaction processing applications.

DEC to provide worldwide EDI

DEC announced last week its intent to provide EDI software and systems-integration services on a worldwide basis at the TDCC — Electronic Data Interchange Association's annual conference in Washington, D.C. DEC, which introduced VAX/EDI software in the UK in July, will support the X.12, Edifact and ISO X.400 standards, officials said.

NAS freezes Unix pact with Sun

BY JULIE PITTA
and J.A. SAVAGE
CW STAFF

ATLANTA — The feud in the Unix market has claimed one casualty. National Advanced Systems (NAS) has put on hold its plans to develop a mainframe version of the Unix-based Sun Microsystems, Inc. operating system.

NAS recently sent pink slips to its 30 employees in the System Software Development Center here. That group was to port the Sun operating system — based on AT&T's Unix System V, Release 3 — by late 1989. NAS and Sun entered into a joint development agreement in July 1987, and, technically, the agreement remains alive. A NAS spokesman declined to comment on any penalties NAS may incur in modifying its relationship with Sun.

A NAS spokesman said the company is concentrating its development efforts on AIX, IBM's version of Unix. IBM-compatibility is considered crucial to NAS' survival.

The company maintains that closing down its Atlanta operation has nothing to do with persistent rumors that National Semiconductor Corp. intends to sell off NAS.

IBM's AIX has been selected as the kernel for the Open Software Foundation's (OSF) version of Unix. The OSF, led by IBM, Hewlett-Packard Co. and Digital Equipment Corp., was formed earlier this year to counter the joint development efforts of Sun and AT&T — which owns Unix.

OSF officials have charged that Sun — the market share leader in the technical workstation sector — would receive an unfair competitive advantage as a partner in Unix development.

Working away

AT&T and Sun are working feverishly to develop Unix System, Release 4, which is expected to be available by mid-1989. The OSF, which is in the process of selecting a user interface, is expected to release its version of Unix by 1990.

NAS will support any standard established by the OSF, the spokesman said.

A Sun spokesman expressed disappointment at NAS' decision. "We're pretty far along in the development work; we'd like to find another partner," the spokesman said.

Ironically, Sun and AT&T have recently staged a number of public events to demonstrate support for Unix System V, Release 4 among users and third-party Unix developers. The spokesman downplayed the impact of NAS' reversal.

"All it does is slow down the emergence of a mainframe version of the Sun operating system," he maintained. "It will have no other major impact."

NAS is now forced to play catch-up with its chief rivals Amdahl Corp. and IBM. William Bonin, vice-president of North America operations for Unix industry X/Open Consortium Ltd. said the decision is a big win for Amdahl.

"Amdahl has based a big chunk of its strategy on Unix," Bonin said. "Now, its only competitor is IBM."

Bonin said he does not expect the loss of NAS to hamper Sun and AT&T. "They're not a player in Unix," he explained. "If Unisys dropped out, that would be a big deal."

Amdahl offers its own version of Unix called UTS, based on the Sun operating system. This places NAS at a greater disadvantage to rivals Amdahl and IBM.

Big overhaul

FROM PAGE 1

Prime Chief Executive Officer Anthony Craig.

According to a highly placed Prime source, the plan does not contemplate dropping or phasing out any product line. Layoffs, however — possibly a great number, and probably concentrated at the middle level of the corporate reporting structure — are not being ruled out.

"This looks like a very major move," said Charles Foundyller, president of Cambridge, Mass.-based market research firm Daratech, Inc. He added that Prime users stand to benefit from the reorganization in that a leaner, meaner Prime could mean "a lot fewer meetings and a lot more action."

He said the reorganization, while creating a more efficient corporate structure, will also reshape Computervision into an entity less capable of being quickly sold off in the wake of a takeover.

In the weeks since Tustin, Calif.-based MAI made its hostile bid for Prime, industry speculation has been rife that MAI Chairman Bennett LeBow, well-known as a so-called "asset player," intended just such a quick sale of Computervision, a major force in the computer-aided design and manufacturing market. Recent unequivocal denials of such intent by LeBow and partner William Weksel have failed to end the speculation.

LeBow et al are wooing Prime shareholders with promises of a markedly more efficient and productive Prime under MAI ownership. Prime's own reorganization, Foundyller noted, augurs the same. "The only thing LeBow knows how to do is go in there with a cleaver," he said. "If Craig can wield a cleaver of his own, stockholders might reason, who needs LeBow?"

Prime 1; MAI 0

In related news, Prime last week won a first-round victory in the legal skirmishes with MAI spawned by the takeover attempt.

The U.S. District Court for the Massachusetts district granted a preliminary injunction that bars MAI from continuing their tender offer until certain disclosures have been made to Prime's stockholders.

Among the topics on which shareholders are entitled to further detail according to the Court are MAI's post-merger plans for Prime; certain prior claims of federal securities law violations against LeBow and Weksel; and the convoluted relationships among MAI, a number of limited partnerships affiliated with Drexel, and Drexel itself — found by the court to be a "bidder" for Prime within the meaning of the law.

Dell lowers prices by up to $1,000

AUSTIN, Texas — One personal computer supplier, Dell Computer Corp., says it can reduce prices as a result of the decrease in dynamic random-access memory (DRAM) chip prices.

Dell spokesmen said the company is lowering prices on low-end models and on its largest memory models, which are based on Intel Corp.'s 80386 microprocessor.

The price of Dell System 310 and 325 models with 1M byte of DRAM as standard will drop by $200, and System 310 and 325 models with 4M bytes of DRAM will now be priced at $1,000 less.

Michael S. Dell, Dell's chairman and chief executive officer, said the reductions reflect evolving conditions in the DRAM market, with a stabilization of DRAM prices and a "gradual decrease of chip prices as supply has caught up with demand."

Price decreases of $200 to $2,500 also apply to Dell memory-upgrade kits. A 512K-byte upgrade kit is reduced by $200, while an 8M-byte memory board for a larger Model 310 or 325 is cut $2,500.

Rolm deal: New PBX strategy?

BY ROBERT MORAN
CW STAFF

IBM's intended sale of its Rolm Systems Division manufacturing and development operations to Siemens AG is a signal that private branch exchange (PBX) technology will not serve as the once-anticipated linchpin in voice and data integration.

That was the consensus opinion of industry watchers about last week's announcement, in which the two companies also agreed to create a marketing and services company called Rolm Co. This company will sell telecommunications products for private networks in the U.S.

Meanwhile, Rolm's U.S. customers wondered what the announcement means to them. With $16 million recently invested in an IBM-Rolm telecommunications system, Neil Sachnoff, director of information services support at Columbia University in New York, said the university is "cautiously optimistic" about the effects of the agreement. But he expressed curiosity about how the marketing division of Rolm Co. will handle being the vendor representative of Rolm, Siemens, NEC Corp. and GTE Communications Systems equipment.

Rolm user Hank Backofen, manager of corporate telecommunications at Prime Computer, Inc., said the agreement will not have much impact on Prime, which is used to dealing with separate sales, maintenance and sales support departments at IBM.

According to Fred Chanowski, president of Telecommunications Management Corp., the linchpin role in voice and data integration at IBM has now become the province of higher level networking. He said it is implemented in T1, transmission services, wire and fiber-optic media.

The agreement — which includes the establishment of IBM's Rolm Systems Division as a Siemens development and manufacturing subsidiary and IBM's marketing of a Siemens PBX in Europe — will allow IBM to sell a PBX in its systems integration business without having to brook the characteristically low return on investment encountered in PBX manufacturing.

Further, IBM has gained access through Siemens to what it lacked most: the highest end of communications technology, said Harvey L. Poppel, a partner at Broadview Associates, a Fort Lee, N.J., investment banking firm.

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C., said that the agreement prepares IBM to take advantage of the 1992 pan-Europe agreement that will create a boom in the communications marketplace. "IBM didn't have a European-based PBX to greet the anticipated growth in the market," he said. "IBM will be able to sell Siemens European products and merchandise to large enterprises based on specific opportunities."

In turn, Siemens garners credibility in the U.S. from its association with IBM, as well as the time to integrate operations and penetrate the Rolm customer base, Chanowski said. IBM will also phase out its 8750 PBX systems slated for the European market.

Novell releases a hodgepodge of product plans

BY PATRICIA KEEFE
CW STAFF

NEW YORK — Novell, Inc. last week unwrapped a hodgepodge of announcements that analysts said did as much to confuse the company's 1989 plans as to clarify them. Beyond positioning statements, much of the session was devoted to shadowy descriptions of the company's future product directions.

Novell's 1989 file server strategy includes an obtusely named "value-added services platform for applications development" and features the following:

- Netware 386, an Intel Corp. 80386-based server that reportedly will provide at least three times the performance of the company's Intel 80286-based server.
- Server products under development for two standard client-server protocols: Sun Microsystems, Inc.'s Network File System and IBM's Server Message Block. This move reportedly will allow users of OS/2 Extended Edition and Unix-based workstations to be able to run on Netware networks in their native environments.
- Support for LAN Manager clients via IBM's Netbeui/Data Link Control protocol.
- Support for host-based servers that would run on top of a general-purpose operating system, such as Netware for Digital Equipment Corp.'s VMS, which shipped in September. Netware for OS/2 is scheduled to ship in 1989. Mark Caulkins, vice-president of Novell's software group, conceded that IBM's MVS and VM systems are logical candidates for support.

Novell also promised to support and encourage distributed application development using such vehicles as Microsoft Corp.'s Named Pipes application programming interface and IBM's Advanced Program-to-Program Communications. First-quarter availability is planned.

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DATA SET NAME	VSAM TRKS ALLOC	VSAM TRKS USED	IAM TRKS STD	IAM TRKS COMPR	% SAVINGS STD	% SAVINGS COMPR	TOTAL RECORDS	AVERAGE LARGEST	MAX LRECL
BIG.CLUSTER	37155	37155	27855	15600	25	58	4754670	233 502	580
CICS.FILE.MASTER.TABLE.CLUSTER	21000	19005	12720	9485	33	50	5068165	150 150	150
NAME.ADDRESS.FILE	9315	8985	6465	1875	28	79	428529	680 2090	2090

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The new on-line world of 'Santa's helpers'

BY JULIE PITTA
CW STAFF

BRISBANE, Calif. — Santa's workshop has computers.

In a shimmery white building on the shores of the San Francisco Bay, a group of 300-plus would-be elves spend months busily designing stuffed animals that will find a home with some lucky boy or girl at Christmas.

The number of Christmas wishes has become so great that the elves have abandoned the pencil and pad, on which they once kept their lists, in favor of computers.

The workshop has three mainframes — two Unisys Corp. V380s store production and accounting information, and a V310 is used for software development purposes. Connected to those mainframes are 150 terminals.

Bill the Cat vs. Garfield

Santa's helpers, just like everyone else, are interested in efficiency. And since the computers came in, Santa rarely finds himself with too many Bill the Cats when what the kids really want is Garfield.

The white building is the headquarters of Dakin, Inc., a manufacturer of stuffed animals and other gift products.

If you could ignore the warm sunshine, it would be easy to mistake Dakin's headquarters for Santa's workshop. The glass-and-stucco building has a magical quality as it sparkles in the sunlight.

"It's been called the crystal palace," according to Pete Bardea, Dakin's director of information systems.

Dakin's lobby opens into a showroom of its products that range from decorator items such as frames and vases to children's clothing. But most of the exhibition area is devoted to Dakin's core business — stuffed animals.

Bardea's information systems group keeps track of the diverse menagerie. Its mainframes maintain information on the company's 70,000 accounts. Bardea estimates that during the year, MIS will have processed about 150,000 orders. It also keeps track of 2,000 types of products in Dakin's inventory.

Computers monitor the travels of Dakin's pets as they shuttle from production plants in the Far East to resting spots at warehouses in California, Illinois and New York and eventually to international customers.

This season's challenge is keeping the stores stocked with enough Garfield's Stuck on Yous, a stuffed animal version of the comic-strip character Garfield with suction cups on its paws.

The product has been phenomenally popular, taking even Dakin by surprise. "It's impossible to predict what'll be hot," Bardea says.

At the time of introduction, Dakin had 12,000 Stuck on Yous ready. Initial orders were placed for 40,000.

Mattel net chases Xmas blues

BY ELISABETH HORWITT
CW STAFF

HAWTHORNE, Calif. — Letters to Santa Claus notwithstanding, Mattel, Inc. has always had to struggle to get its toys under the right Christmas tree each year — without having a lot of unsold Barbies and Hot Wheels sitting in inventory on Christmas day.

This holiday season has been different, however. Just in time for the Christmas rush, the toy company installed the last data link of an international networking system that is expected to substantially reduce inventory stock levels and production-schedule lead time (see chart) and save Mattel approximately $540,000 per year in worldwide communications costs.

Before the network came online, communications between Mattel's data center here and plants and distribution warehouses around the world were haphazard at best.

Too stiff

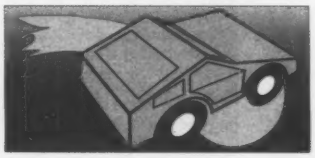
As a result, the toy maker lacked the flexibility to shift production schedules to meet updated sales forecasts on an ongoing basis.

Mattel was also unable to match uncommitted stock in one warehouse with unfilled orders in another because it had no centralized database to keep track of inventory levels around the world. "It took so long to find out what was available, you almost didn't ask," said Jeff Harris, Mattel's director of information technology. "If you ordered it, and it was available, they shipped it."

This situation became critical during the period between late September and mid-December, when the toy industry does approximately 60% of its business, Harris said. Mattel would start building up its inventory in the summer on the basis of long-range sales projections.

But with no way to effectively track inventory movement across all of its warehouses, the company could not accurately update its forecasts once the shopping season started. Nor could it send out modified production schedules to its plants in a timely fashion.

This lack of mobility contributed to the financial bath that Mattel took when sales for Masters of the Universe-related merchandise plunged from $300 million in 1983 to $40 million in 1984. Forecasting its 1984 sales on the basis of 1983 performance and unable to react quickly enough to changing market demand, the company "wound up sitting around with an awful lot of Masters of the Universe," Harris said.



In November 1987, Mattel's information systems department got approval to start building a companywide network to address these problems as well as an out-of-control communications budget. The network combined private terrestrial lines and very small-aperture terminal satellite dishes to support voice, data, telex and facsimile communications.

Last October, a link to West Germany completed the data side of the network, which connects IBM Application System/400s and System/38s installed at Mattel headquarters, at worldwide distribution centers and at manufacturing plants in the Far East. Thus, a warehouse in West Germany may be able to fill an unexpected order for Barbies by requisitioning uncommitted stock in France or finished goods awaiting shipment in Hong Kong. Mattel now knows what finished goods are due from which plant on a daily basis and "where inventory is in terms of our ability to move it," Harris said.

Direct links between headquarters and overseas plants provide Mattel with "better alignment between the production schedule, market forecast and real orders," Harris said. Also, engineers at Hawthorne can exchange drawings and changes with overseas plants overnight via electronic links. This shortens the time it takes for a concept to become a product and allows Mattel to bring out new toys in time to catch passing fads, Harris said.

One step beyond

Last May, Mattel Chief Executive Officer John Amerman praised the network as "a joy to behold, a quantum leap forward," adding that Mattel could "now manage inventory rather than react to situations as they occur." Mattel says it expects inventory turnaround cycles to drop from 30 days to one day as a result of the network.

Another of the network's major goals is to allow the firm to control communications costs by providing the same level of network service to all its sites and work groups at a set monthly cost, Harris said. Under the old system, "costs were very difficult to control and utilization hard to manage," Harris explained, because private lines were installed on an as-needed, project-by-project basis. The new network makes 9.6K bit/sec. leased lines available throughout Mattel at set monthly rates.

The complete system should be up and running by March. It is expected to reduce Mattel's 1988 communications expenses by $810,000. Inventories for this Christmas season "are already down substantially," Harris said. While Harris refused to give the network full credit for these developments, the system has clearly helped make this Christmas a little merrier for Mattel.

Santa's helper

A data network enables Mattel to shave days from critical business processes

	Time cycle pre-network	Time cycle post-network
Inventory update	30 days	1 day
International demand forecasts	3-4 days	Interactive
Financial consolidation	7-10 days	1 day
Production schedules	10-14 days	1 day
Engineering drawings		

SOURCE: MATTEL, INC.
CW CHART

EDI eases toy order rush

This holiday season is also the first in which Mattel has used electronic data interchange (EDI) to exchange documents with key retail chains. The company currently exchanges purchase orders and invoices electronically with most of its major distributors, including Wal-mart Stores, Inc., K Mart Corp., Sears, Roebuck and Co., Toys R Us, Inc., Child World, Inc. and Service Merchandise Co.

Mattel began setting up EDI links with its retailers in 1987 and is now trying to bring a new document on-line with one of its trading partners each month, according to the company's EDI coordinator, Roy Fazalare.

While "you can figure out paper costs for a rough handle on savings," the real paybacks of EDI are intangibles such as "dollar float and service to your customer," he added. EDI can form the basis for "quick response, the retail industry's equivalent of just in time," Fazalare said.

The company is currently looking at EDI links as a way to provide point-of-sale information, according to Jeff Harris, director of information technology at Mattel.

Right now, the company gets sales data from selected stores every two weeks. With EDI, "we would know about today's sales tomorrow, and our forecasts would keep improving," Harris said. GE Information Services, a division of General Electric Co., acts as an electronic post office where the documents can be picked up.

EDI also offers major benefits to the retailers, said Joe Franzino, an assistant to Service Merchandise's EDI administrator. The links have cut the time it takes to process a purchase order or change from five to 10 days down to two days, he said. "So, we have faster turnover of sales items, and better customer service."

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	Huntsville	Feb 7*g*
	Montgomery	Feb 23
AZ	Phoenix	Feb 7*cfm*
	Scottsdale	Jan 12*r*
	Tucson	Feb 14
CA	Costa Mesa	Jan 24*cfm* Feb 23*ar*
	La Jolla	Feb 9*am*
	Los Angeles	Jan 19*fm* Feb 16*acr*
	Ontario	Jan 10
	Oxnard	Feb 2*fm*
	Sacramento	Jan 17*r*
	San Diego	Jan 17*fr*
	San Francisco	Jan 24*fr* Feb 15*apr*
	Santa Clara	Jan 12*fm* Feb 9*ar*
CO	Colorado Springs	Feb 22*r*
	Englewood	Jan 31*fm*
CT	New Haven	Jan 11*ap*
DC	Washington	Jan 18*g* Feb 16*g*
FL	Boca Raton	Feb 7*fm*
	Jacksonville	Jan 19*fr*
	Miami	Jan 17*fr*
	Orlando	Jan 18*p* Feb 9*g*
	Pensacola	Feb 22
GA	Atlanta	Jan 17*f*
	Savannah	Feb 16*p*
IA	Des Moines	Jan 17*f*
IL	Chicago	Jan 25*ft* Feb 22*a** Feb 28*fm*
	Springfield	Feb 14*c*
IN	Indianapolis	Jan 31*fr* Feb 21*ac*
KS	Wichita	Feb 16*t*
KY	Lexington	Jan 24
	Louisville	Feb 7*r*
LA	New Orleans	Jan 27*f*
	Shreveport	Feb 16*r*
MA	Boston	Jan 17*fr*
	Springfield	Jan 19*t*
	Worcester	Feb 8
MD	Baltimore	Jan 24*m* Feb 7*t*
MI	Dearborn	Feb 7*ft*
	Grand Rapids	Jan 12*f*
	Lansing	Feb 14*fp*
	Troy	Jan 10*c*
MN	Minneapolis	Jan 11*ft* Feb 15*cr*
MO	Kansas City	Jan 26*f*
	St. Louis	Jan 12*f* Feb 9*t*
NC	Charlotte	Jan 25
	Greensboro	Feb 15*r*
	Raleigh	Jan 10*fr*
NE	Omaha	Jan 4*c*
NH	Merrimack	Jan 12
NJ	Iselin	Jan 10*ar* Feb 15*fr*
	Princeton	Jan 18*f* Feb 15*t*
	Secaucus	Jan 26*f*
NY	Albany	Jan 18*t*
	East Syracuse	Jan 10*at*
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COMPUTERWORLD

Consortiums all the rage in '88

ANALYSIS

BY JULIE PITTA
CW STAFF

EISA, OSF and OTF. Put them together and what do they spell? Confusion.

These three acronyms are perhaps the best-known examples of the biggest trend in the computer industry this year: technology consortiums.

"It's this year's fashion," said Dick Shaffer, editor of the "Technologic Partners" newsletter. "Last year, it was strategic partnerships; this year, it's industry consortiums."

The Open Software Foundation, led by IBM, Digital Equipment Corp. and Hewlett-Packard Co., was first on the consortium bandwagon last winter with a charter to preserve the "openness" of the Unix operating system, owned and freely licensed by AT&T.

Personal computer makers banded together in September to form the Extended Industry Standard Architecture group to develop a 32-bit extension to IBM's Personal Computer AT bus architecture. IBM introduced the Personal System/2, its own line of PCs with a 32-bit bus architecture called the Micro Channel, almost 18 months ago. Micro Channel licenses from IBM are reportedly not cheap, costing up to 5% of the sale price of each PC.

Compaq Computer Corp., the acknowledged leader of EISA, has criticized IBM for its attempt to control PC technology. Ironically, it was Compaq that developed the EISA specification.

Earlier this month, a group of local-area network vendors formed the Open Token Foundation, which has as its guiding force "interoperability" among different token-ring products. IBM currently has about 90% of the token-ring market.

Shaffer called the formation of OTF "a group of people who don't have market share leaving out the people who do."

'All for the customer'

Although EISA, OSF and OTF all coalesced around three very different technologies, all three say that their intentions are philanthropic in nature. "Openness" is a word used often by consortium members. "Protecting the customer" is also popular.

Openness will offer the end user more options, the consortiums say. Industry standards will ensure that those options are compatible, they maintain.

For their part, customers appear unimpressed with all this concern. "When I hear that it's in the customer's best interest, I run in the opposite direction," said Phil Gordon, manager of office systems at Charles Schwab & Co. in San Francisco.

Enzo Torresi at Businessland, Inc., another skeptic of this industry trend, said all the consortiums have a common theme — preventing further market penetration by the leader in their particular market.

"There's an old Chinese saying that the challenger soon starts to resemble the enemy," he maintained. "To sell on the tactics of fear, uncertainty and doubt places them on the wrong side of marketing strategy."

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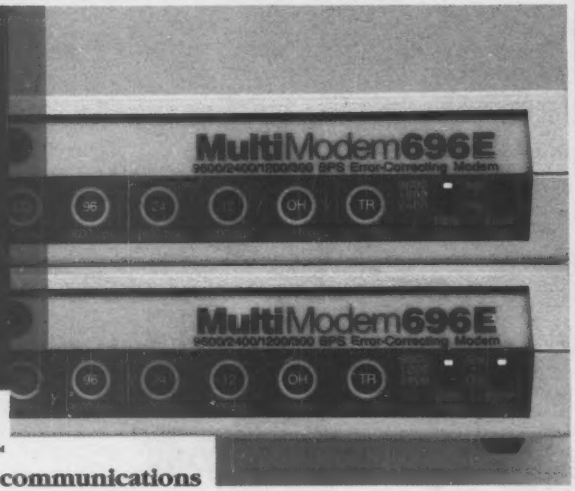

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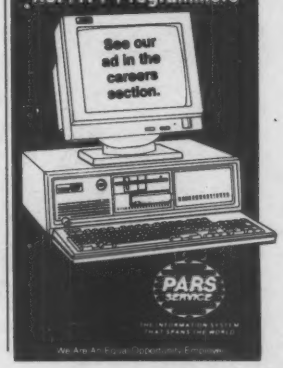

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Duquesne, Morino link arms

Customers applaud union, seen as hostile-takeover defense

BY AMY CORTESE
CW STAFF

There was not a disgruntled customer to be found at Morino Associates, Inc.'s annual users group meeting in Dallas last week. A notable occurrence under normal circumstances, the satisfaction of Morino's customers following the announcement of its merger plans with Duquesne Systems, Inc. was especially noteworthy.

"The merger of two high-quality vendors is assuring that they are getting up to a viable fighting weight," said Daniel Kaberon, a consultant at Hewitt Associates, a benefits consulting firm that uses both Duquesne and Morino software. "It makes them each a more viable vendor in the long term."

The merger, pending board approvals, has been widely viewed as a strategic action taken to ward off unwanted takeover attempts by acquisition-oriented companies such as Computer Associates International, Inc. [CW, Dec. 12].

"I'm glad to see they're not being bought by CA," one user remarked. Although CA insists it is not interested in unfriendly takeovers, "CA can make an offer that is so overwhelming, shareholders can't turn it down," said William Franz, a senior systems analyst at The Williams Companies, a telecommunications conglomerate in Tulsa, Okla.

Little user impact

Wayne Godbehere, manager of storage management and performance at Bell Canada Enterprises, Inc., said the merger will not have a big impact in the short term because it will be transparent to the user. He added, however, that it will put Morino in a better position, which will benefit Morino customers indirectly.

The merger is viewed as synergistic by employees of both companies as well as by customers. The product lines are complementary, and many Morino customers are also customers of Duquesne. When Duquesne Chief Executive Officer Glen Chatfield asked for a show of hands from those who were customers of both, nearly half of the members of the packed auditorium raised their hands.

The two firms have worked together on development in the past. Morino's flagship reporting product, MICS, already interfaces with Duquesne's Netspy. Logical sets of products will be tied together, and new product opportunities are being explored, Mario Morino, CEO of Morino Associates and chairman of the new company, told customers last week.

The only product overlap is with the MICS product and Duquesne's Billing Data Base Facility (BDBF). A migration path will be provided from BDBF to MICS, and eventually the two will be melded together.

Morino assured users that no employees or products will be eliminated.

HP ups mini ante, trumpets EISA model

Hewlett-Packard Co. last week announced it will raise prices by 13% on its two high-end HP 3000 minicomputers beginning Feb. 1.

The increase in price is not because of escalating manufacturing costs or the scarcity of memory chips, according to Doug Chance, executive vice-president of the company's newly formed Networked Systems Sector. Instead, he said that after benchmarking comparable systems, HP decided that the market would support a higher price.

The company also announced that it will lower the trade-in value of its next-lowest minicomputer, the Model 70, by 25%.

In addition, according to President John Young, the company expects to be the first to roll out a personal computer with an Extended Industry Standard Architecture bus to rival IBM's Micro Channel. He said that this machine, to be based on the Intel Corp. 80386 processor, will be available in the second half of next year.

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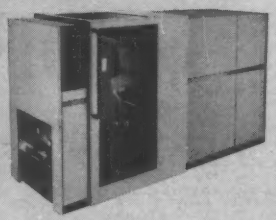

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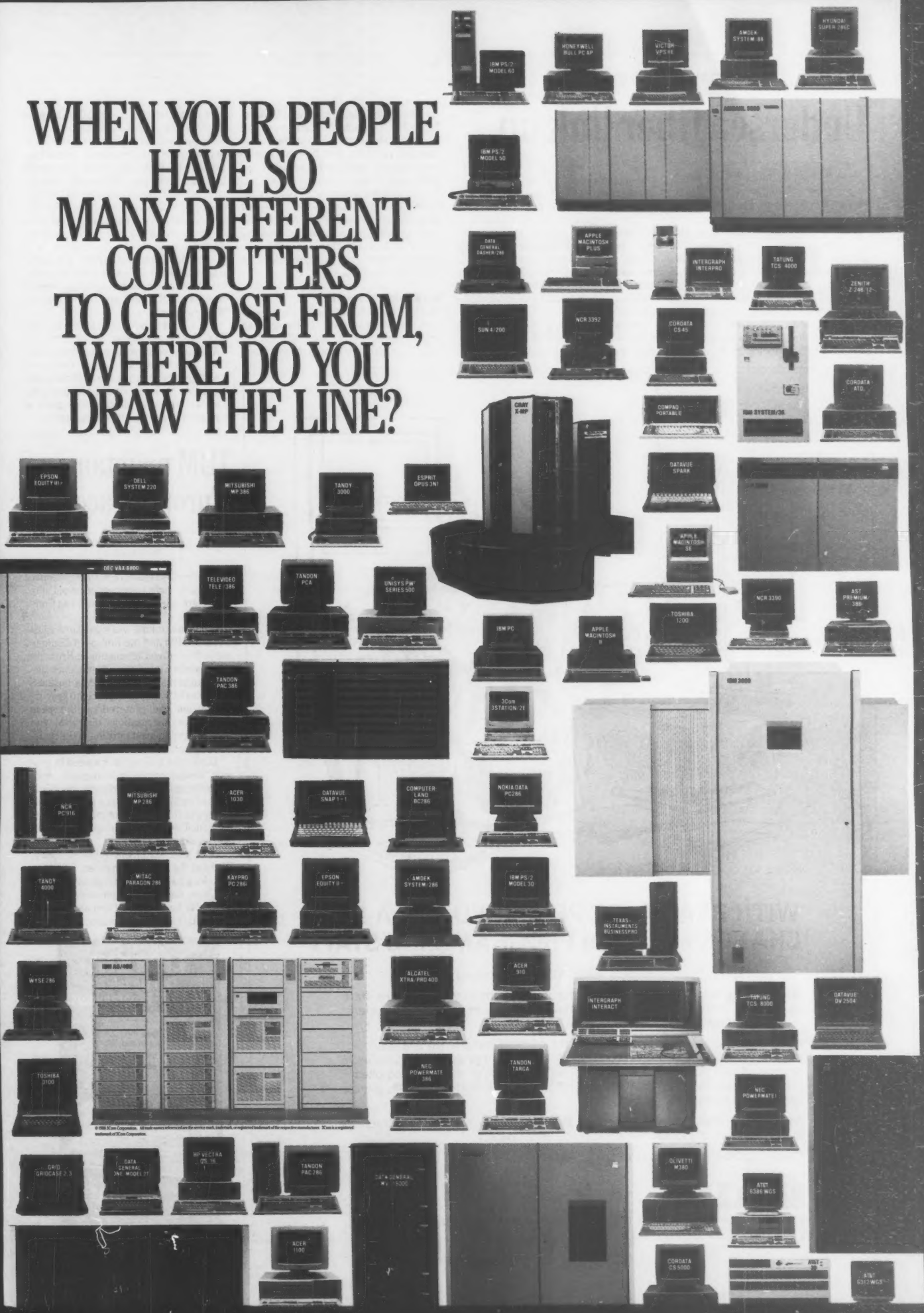

Undersea fiber link up

BY ELISABETH HORWITT
CW STAFF

TUCKERTON, N.J. — The first fiber-optic transoceanic cable went operational last week, giving users their first — and, likely, a less costly — alternative to satellite links for digital communications between North America's East Coast and Europe.

Called TAT8, the cable supports a capacity of 560M bit/sec., effectively doubling the existing transatlantic cable capacity, according to AT&T, which owns 34% of TAT8's bandwidth. Among the other 29 co-owners of TAT8 are MCI Communications Corp., British Telecommunications PLC, France Telecom, Inc. and Western Union Corp.

The inauguration of TAT8 poses a direct threat to international satellite carriers, such as Communications Satellite Corp., which until now have had a virtual monopoly on digital transatlantic links, industry sources said. Other transatlantic cabling systems support analog communications only.

A few years ago, "people were willing to take bets that satellites would eliminate the need for transatlantic cable," said Thomas Nolle, president of Haddonfield, N.J., consulting company CIMI Corp. But fiber-optic cable may force vendors and users to "rethink what constitutes a valid satellite network," Nolle said, since it offers higher capacity and greater reliability than satellite links and is free of the transmission delays that plague satellite networks. TAT8 is also likely to bring prices down for links between the U.S. and Europe, according to Richard Wallerstein, a spokesman for AT&T International.

Spreading out costs

The system's $361 million installation cost, shared among the 30 co-owners, can be amortized over the cable's 25-year life span. This strategy results in lower service costs, which "we traditionally pass on to the user," Wallerstein said.

In preparation for TAT8's going operational, AT&T International revised its pricing structure last month so that inland cities now pay substantially less for transatlantic connections, he added. For example, a Chicago-to-London 56K bit/sec. connection dropped more than 40% in price, from $7,000 per month to $4,000 per month.

Another boon that TAT8 will bring transatlantic AT&T users is the availability of intermediate transmission speeds such as 128K, 256K and 512K bit/sec., Wallerstein said.

MCI plans to offer private-line links of 64K bit/sec. and higher on its section of TAT8 as well as voice communications, said Vice-President Larry Codacovi. TAT8 services can provide a crucial backup facility for international corporations, such as brokerage houses, that place a high priority on reliable communications.

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IBM maintains European accord

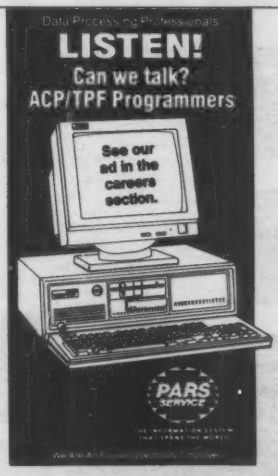
BY AMIEL KORNEL
IDG NEWS SERVICE

PARIS — IBM has agreed to provisionally waive its right to end a 4-year-old antitrust agreement with the European Community.

The undertaking was signed in August 1984 by IBM and the European Community's Executive Commission in Brussels. This led the European Community to suspend an investigation of IBM's business practices in Europe. That eight-year investigation had centered on European competitors' accusations that IBM was abusing its dominant position in the mainframe arena.

Under the accord, IBM agreed to provide competitors, upon request, with technical data on interfacing specifications of its 370 architecture products. According to the commission, about 20 firms have filed 66 requests involving roughly 700 questions.

In a joint statement released today, IBM and the commission noted, "The undertaking has come to serve as an effective way, under the commission's aegis, to resolve between IBM and its competitors certain interfacing questions."



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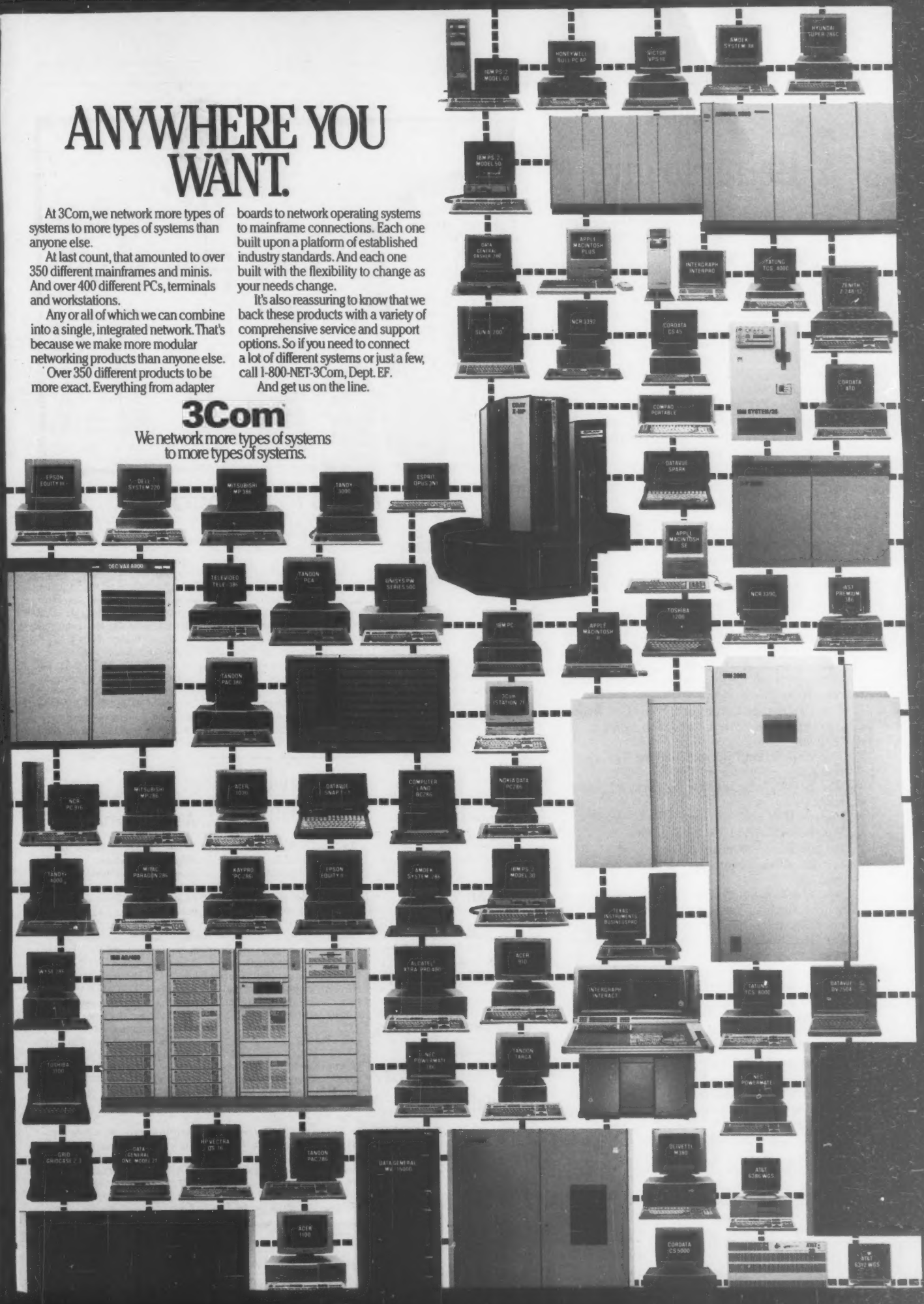

EDITORIAL

Better to give

THE INDUSTRY HAS given so much to so many this year, and we want to give something in return. Here is our somewhat less-than-serious holiday gift list for certain prominent figures in 1988; we trust they will accept it in the fun spirit of the season.

For the Open Software Foundation and Unix International: A Unix-compatible Nintendo system in the hopes that they may find a new way to resolve their differences.

For former IBM executive Bill Lowe: A Xerox copy of IBM's PS/2 marketing plan that he can throw away.

For Microsoft and Hewlett-Packard: A quick phone call from Lowe to Apple to discuss who really invented that interface.

For Prime Computer: A poison pill in a pear tree.

For Fujitsu and IBM: Someone to explain what they just agreed to.

For Compaq's Rod Canion: A dictionary, so he can mull our definition of oxymoron — "Multiple industry standards."

For Lotus' Jim Manzi: A vaporprofit he can realize from all the vaporevenues generated by the new vaporversions of Lotus spreadsheets, and several thousand shares of vaporstock.

For Cullinet's John Cullinane: Someone who will agree with him that DB2 isn't a success.

For alleged Internet virus creator Robert Morris: Several thousand E-mail messages from Santa.

For fly-by-night computer security firms cashing in on nervous users: A worm on all their houses.

For Wall Street MIS executives: A program trading system written in Advil.

For Steve Jobs: Something that will make John Sculley cry again.

For the IBM 9370: A reason to continue.

For the IBM AS/400: A "told you so."

For the DEC Vaxmate: A user.

For H. Ross Perot: An edible noncompete contract.

For AT&T: A letter from someone who really, really wants ISDN for Christmas.

For the minicomputer market: A LANslide.

For OS/2 users: A lifetime of (1M-bit) memories.

For college administrators trying to recruit students for MIS degree programs: Another stock market crash.

For Ashton-Tate: A vacation from all the Rodney Dangerfield jokes.

For U.S. computer companies doing business in South Africa: A virus they can call their own.

For Computer Associates buyout broker Broadview Associates: Nothing. They've got everything already.

For the EISA consortium: A chance to reconsider.

For MIS advocates of downsizing: A bullet to bite on and all the luck in the world.

For ADAPSO: A Christmas card from IBM written entirely in object code.

LETTERS TO THE EDITOR

Avoid undertones

In your editorial, "No real choice" [CW, Nov. 7], you claim not to endorse any presidential candidate. Yet by references to the so-called "Massachusetts miracle" and "pro-business atmosphere," your tacit embracing of Michael Dukakis is blatantly transparent. The fact is that the only miracle to have taken place in Massachusetts is that Dukakis was elected to its Statehouse in the first place.

In some of your recent articles, your publication has evidenced liberal undertones, if not outright bias. Bits and bytes are neither liberal nor conservative, and your reporting should convey the same objective nature.

Ron Baker
Senior Systems Programmer
Wacker Siltronic Corp.
Portland, Ore.

Oh, yeah?

In a recent *Computerworld* article, you quoted Microsoft Corp. Chairman Bill Gates as saying that "true multitasking won't work in a 1M-byte system" [CW, Nov. 21].

How does he explain away a 512K-byte multitasking Amiga 2000? Most of the time, I use the extra memory as a random-access memory disk.

Christopher R. Hertel
Winnetka, Ill.

An unfair slap

As president of the National Association of Computer Consultant Businesses (NACCB), I feel compelled to respond to your editorial, "Where was Dan?" [CW, Oct. 24]. This was an unfair slap at Sen. Daniel P. Moynihan through the use of inaccurate, misleading and incomplete assertions.

Sen. Moynihan did introduce Section 1706 on the recommendation of staffers in the Treasury Department and the Joint Committee on Taxation as a last-minute measure to raise needed revenue. It turned out that this recommendation was incorrect and based on secret discussions between a Treasury Department employee and officials of a trade association that represents large technical service employment firms. They were trying to use tax laws to put small brokers and independent contractors out of business.

After studying the situation and learning the facts, Sen. Moynihan and his staff helped to lead the effort to fix the problems created by Section 706.

We encourage your readers to concentrate their efforts on working with other members of Congress to support S2626 and challenge ADAPSO to listen to their own members and their customers before continuing their fight for Section 1706.

David R. Cassell
President
NACCB
Washington, D.C.

This week in history

Dec. 18, 1978
Pledging greater efforts to reduce federal agency abuse, President Jimmy Carter and top administration officials praise three Department of Health, Education and Welfare computer matching techniques — Project Match, Project Integrity and Project Cross-Check — that detect cheaters in government welfare, health insurance and student loan programs.

Dec. 19, 1983
AT&T plans to dissolve Western Electric Co. as a separate corporate entity and absorb it into the newly formed AT&T Technologies, Inc. as of Jan. 1.

"We could have chosen to call this new enterprise Western Electric Co. We chose instead to put all our resources and reputation behind the AT&T name," AT&T Chairman Charles L. Brown said.

A good word

You never have a kind word for IBM, so I have a few. You would expect an individual, independent consultant to receive little or no attention from a multimegabuck corporation such as IBM.

So I was pleasantly surprised when the local system engineer spent several hours tracking down information that I needed for a course I was developing on Rexx under TSO. He didn't have to do that for me, because he undoubtedly has customers with a much bigger sales volume than I have. It is always good to give credit where it is due.

Gabriel F. Gargiulo
G. F. Gargiulo Training Associates
North Haven, Conn.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

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   - C. Microcomputers/Desktops
   - D. Communications Systems
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Next year, I'll just give a stuffed beagle

MICHAEL B. COHN

We weren't really an unruly bunch. We kept our desks clean, recycled all our printouts and even worked a few weekends. No one tried to put a Kim Basinger poster on the cubicle wall or smuggle out felt-tip markers in a briefcase. But just the same, on the first Monday in December, the vice-president of information systems summoned us together to lay down the law.

"This will be a short meeting," she said. "I've had operations dump a few of your libraries, and I'm afraid we've got a little misunderstanding. Correct me if I'm wrong, but as far as I know, none of you pitched in to pay for the mainframe.

"Now, I'm not going to mention any programmers' names," she continued, "but I want everything cleaned up immediately. No more resumes. No more bowling scores. The computer is for business. Period. If anyone has a problem with that, I'll be glad to discuss it during your exit interview. Any questions?"

We all kind of slinked back to our terminals. At one point or another, we started deleting our personal files and downloaded them to a disk, or at least renamed them with very business-sounding file names, hoping our boss wouldn't notice.

Now, I'm not exactly a daring fellow, but during the pre-Christmas rush, people do things they might not try during the year. I parked illegally at the mall for eight minutes. I crashed the express lane at a department store even though I had more than six items.

And one Thursday night, I stayed at work until 7:30 p.m., intending to commit a brutal white-collar crime.

Cohn is a quality assurance representative based in Atlanta.

Snooping around

My 5-year-old nephew, Andrew, is a Snoopy freak. I had bought him a Snoopy coloring book last Christmas and Snoopy pajamas the year before. But this year was going to be the best.

My buddy in the information center had a little program that drew a Snoopy on the laser printer. It was one of those typical little batch jobs that prints out a Snoopy in special characters, running the length of four or five sheets of computer paper. He told me it just took a couple of seconds to print out a big, smiling Snoopy wearing a Santa Claus suit. Along the bottom, just under Snoopy, it printed big letters that read, "Seasons Greetings to . . . ," and you could put in any name you wanted.

Despite the new department crusade against such a dastardly deed, I figured I'd be safe running this job in the evening. I'd just dash down to the computer room, tear off the printout and sneak away into the night.

I put my plan in motion. The whole floor was dark, and I called up the "Snoopy file," typed in Andrew's name and submitted the job. It popped into the queue with only half a dozen files ahead of it. I figured I'd wait 10 minutes, then shoot downstairs. By then, the little job would be out of the queue and waiting on the printer.

I was almost out the door when the phone rang. "Hi, this is Jim from operations. Thank goodness you're working late. The weirdest thing is happening down here. The system seems to have locked up, like some job is in a loop. The printer is going crazy — one job has already gone through 1½ boxes of paper."

"Well, Jim, I . . . uh . . . I don't know what production job that might be, but I'll come down and take a look at the printout and see if I can help."

It couldn't be! Not my Christmas job! Had I missed a comma or something? Been set up? It had to be some other, "real" production job chomping on some diseased database.

I raced downstairs, bypassing Jim's office. I bolted through the printer-room door and into the roar of a machine out of control. It was a frightening sight.

Mega-Snoopies. Snoopies were coming out of that printer faster than the eye could see. Snoopy Snoopy Snoopy Snoopy Snoopy, page after page after page. Snoopy was in a loop, and I was in a panic.

I grabbed a phone and called Jim. I didn't have time to compose myself. "Cancel that job! It's a mistake! I . . . I . . . I'll resubmit it tomorrow. OK?"

Jim obviously had his own problems, because he wasn't able to kill the job for another 50 or 60 beagles. But finally, the printer stopped, right in the middle of Snoopy's head. I tore off the remains of the final beagle. I managed to hoist the three-foot stack of printouts and made a rapid retreat. I headed for the elevator and pressed my elbow into the "up" button. The doors opened. My career came to an end.

WILLIE HILLENBRAND

Standing in the elevator was the vice-president. Oh, how I wish she had been wearing flat shoes. With those few extra inches, she was able to look down upon that last half a dog, which rested just beneath my chin. She looked very surprised to see me.

"Are those Snoopies?" she asked. In four years with the company, I never imagined that this would be the first question a vice-president would ask me.

"Yes, Ma'am," I replied, figuring that I was about as red-handed as they come.

"Well, you can put them in my office. Follow me."

The 30 pounds of paper seemed light when compared with my likely sentence. I followed her upstairs, off the elevator and down the hall. I wondered if I had thrown out the Help Wanted section of last Sunday's paper. "Just put them on the desk," she said, opening the door for me.

I set the stack down on an empty corner of her desk, but the top 20 Snoopies lost their balance and spilled over onto the floor.

Then I got to see the whole Snoopy card with the message at the bottom reading, "Seasons Greetings to Patrice."

"Patrice?" I stammered. "Oh, that's my youngest daughter," she replied. "She loves when I print little things like this. She's a real Snoopy freak. You should really try this sometime."

"Sure," I said with a sudden sense of innocence, "maybe I will someday."

MISmatching reality and computers

EFREM G. MALLACH

Seeing a grizzled-top sergeant salute a fuzzy-cheeked second lieutenant could create the impression that the youngster with the gold bars is more important to the Army. As any soldier — including honest, fuzzy-cheeked second lieutenants — can attest, this appearance is far from reality.

This example reveals a mismatch between our mental model of the world, which tells us who salutes whom, and the real world, which really matters.

A similar mismatch of appearance and reality pervades MIS. The most serious reflection of the problem occurs when the real world does not match a computer system that is supposed to represent it. The result can be serious, indeed. And the problem is difficult to detect, because we cannot directly ask a computer what its model of the world is.

For example, a Florida construction firm miscalculated a bid two years ago by $250,000 because its spreadsheet model did not properly account for actual costs. The company tried suing the spreadsheet vendor but then discovered that one of its own employees had entered an incorrect formula.

In another case, a Massachusetts manufacturing firm installed a manufacturing resource planning package that assumed there should never be more than 60 open work orders for a given part or assembly. Sixty is plenty for most firms, but this manufacturer had good reason to use very small work orders. The production process got thoroughly bollixed up, and the firm filed for bankruptcy in early 1988.

To avoid such problems, we have to be aware of how mismatches between the real world and its computer model arise. They come from five places:

1. The person who is supposed to describe the real world to systems developers doesn't truly understand it.

This situation often happens when managers are asked about information flow in a system under their supervision. Those who do the work usually understand it better. Managers, by nature, have a hard time admitting ignorance, so they pretend to know. Woe to the systems analyst who believes them.

2. The systems analyst flubs the specification.

Ego plays a part here, too. Systems analysts might be embarrassed to admit that they do not understand net present value, moment of inertia or cut-and-fill calculations. Inscrutable specs and reviewers who cannot be bothered to review properly are also contributing factors.

3. The specs oversimplify the world.

Some simplification is always necessary, but oversimplification is dangerous. A model of traffic flow cannot take into account the statistical probability of each driver's swerving to avoid a cat. Every financial model, manufacturing simulation or computer-aided design stress calculation ever written makes some simplifying assumptions. The key is to test simplifications for their impact on program results before accepting them as valid.

4. There are unknowable factors.

Nobody knows what interest rates will be in a year or in the future. People can guess and do. But guessing, no matter what fancy name we give it, is not knowing. Results must be checked for sensitivity to guesses, predictions, forecasts and market research sampling errors.

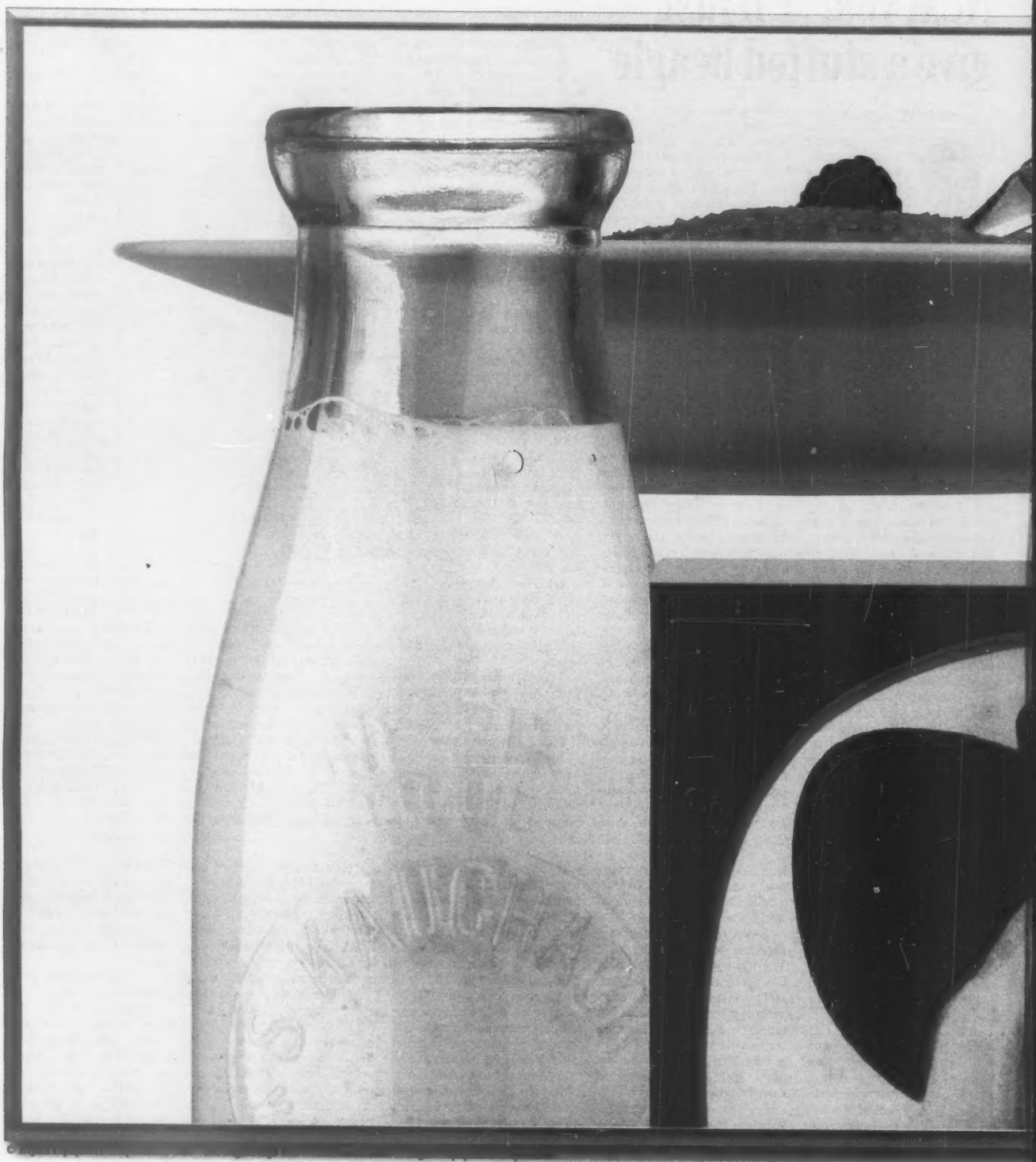
5. The resulting program has a bug.

Programmers are still human, despite some spouses' claims to the contrary. Automatic program verification, for all but trivial programs, is still a dream. Users tend to take computer output as gospel. They need to be reminded that its origins are less than divine.

Everyone in the industry knows the acronym GIGO: garbage in, garbage out. The phrase is usually applied to data. But it applies equally to the model of the world that is implicit in a program, a spreadsheet or a database procedure.

Whatever its source, garbage is garbage. It should be identified and hauled unceremoniously to the dump.

Mallach is a faculty member at the University of Lowell in Massachusetts and a consultant to users and vendors.



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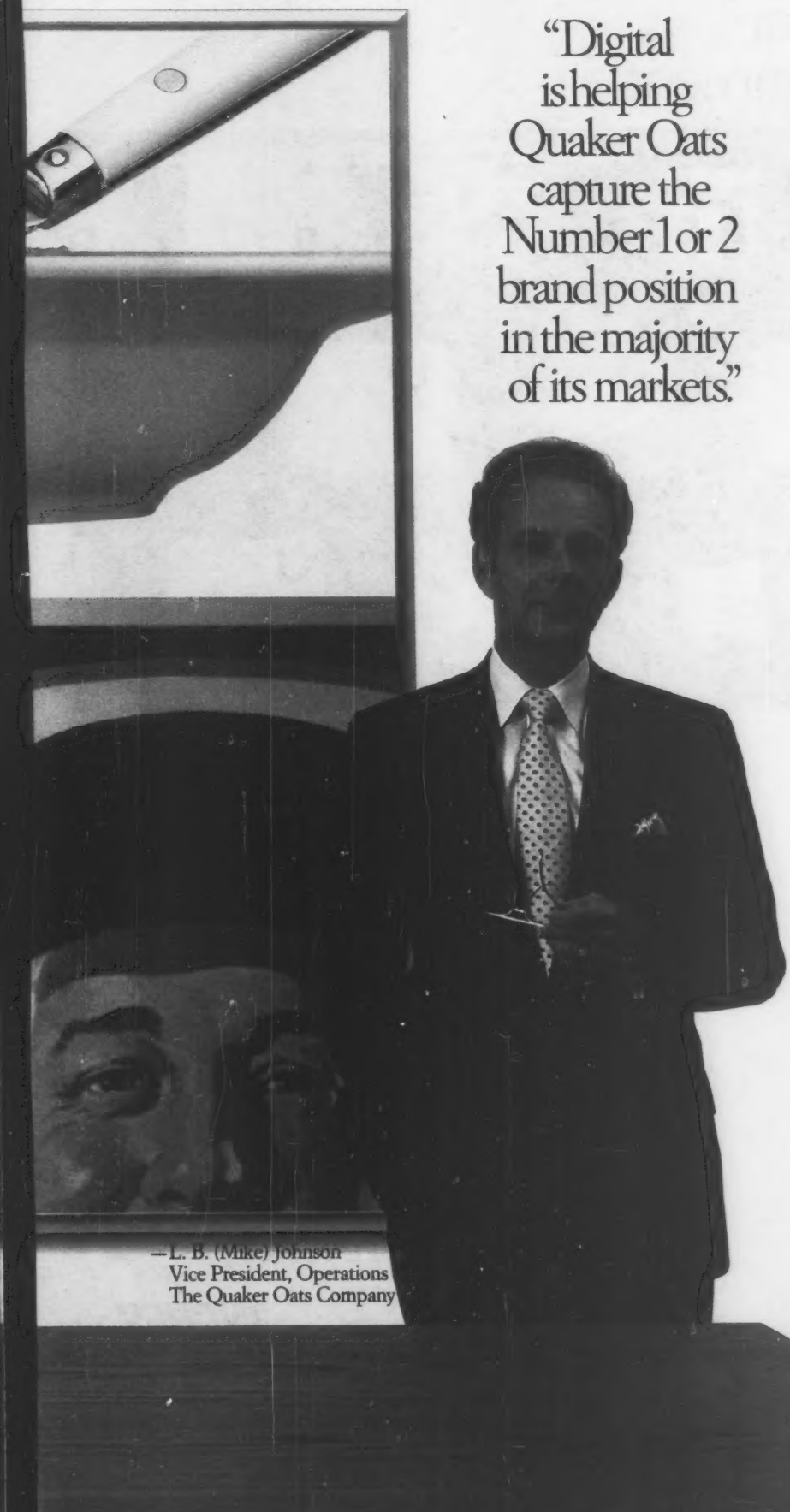

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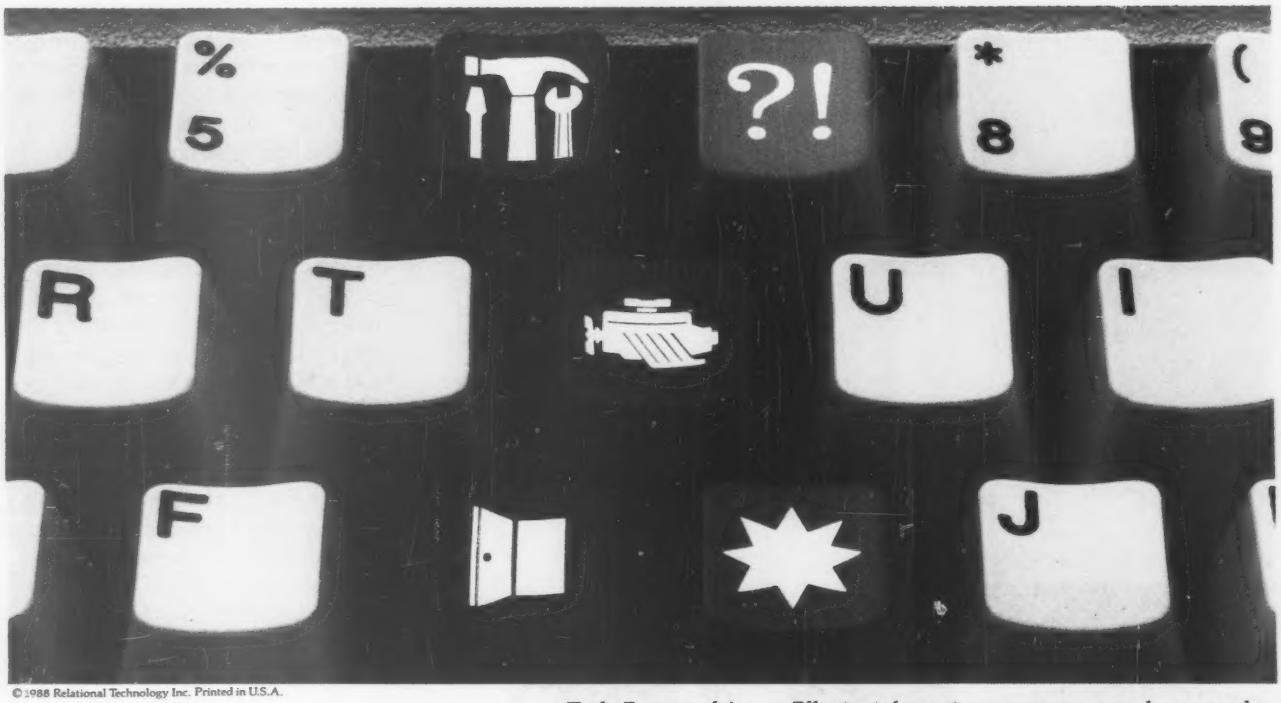

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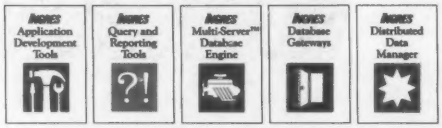

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CW

SOFT TALK

Stanley Gibson

The exclusive meaning of "exclusive"

The week before last, DEC and Cullinet announced Cooperative Marketing Program (CMP) agreements for three Cullinet products. Included were Cullinet's database management tools Enterprise:Builder and Enterprise:Generator, which are intended to be used as tools with DEC's RDB relational database.

That prompted a question from the unwashed in attendance: Hadn't DEC just announced several weeks before an "exclusive" agreement with Relational Technology for the use of its Ingres tools with RDB?

The answer came from DEC's Jack Smith: DEC doesn't make exclusive agreements, and the deal with Relational was not an exclusive one, he said.

In fact, the word "exclusive" was in the contract between DEC and Relational, both parties later acknowledged. Here begins the kind of ambiguity that only a lawyer could love.

As DEC explained it, agree-

Continued on page 26

Electronic vaulting catches on

Analysts call off-site, real-time backup a rapidly growing alternative

ANALYSIS

BY JAMES DALY
CW STAFF

MIS managers are continually reminded that the road to bankruptcy court is littered with former executives who made no contingency plans for their data if it were to be lost or mangled.

Whether it is a rat chewing through a cable or the Mississippi River opening a new tributary in the computer room, the interruption of data flow is a fear that surely rests in every MIS manager's mind. Recently, disaster-recovery service firms have decided it is one paranoia that needs a little tweaking.

The latest technology to rise out of these fears is electronic vaulting, a method of duplicating and transferring critical data to an off-site — but connected — system. Vaulting eliminates the daily need to physically transport duplicate backup tapes from a customer's data center to a remote facility — which is often hours away — and then on to a recovery hot site should disaster strike.

Although the basic technology of transmitting data to a direct-access storage device farm has been available for 10 years, these systems were relatively crude, offering little more than off-site tape vaults with communications facilities. They also did not offer real-time data duplication, which electronic vaulting's use of fiber-optic hookups makes possible.

Now, some analysts believe that electronic vaulting has matured enough that it will rapidly make inroads into many offices. "By the end of 1989, electronic vaulting will be a mainstay process in terms of what a data center manager will be asked to provide," said Thomas Martin, president of Network Planning and Management Associates, Inc., a communications consulting firm in Washington, D.C.

Vault-tolerant

Still, it is not for everyone. Few believe it could eventually wipe out the off-site storage business. Off-site storage companies are also quick to put a bug in users' ears by noting that their customers' data is far too important to be entrusted to an as yet unproven technology.

Electronic vaulting also does not come cheap: The monthly cost for electronic vaulting ranges from $5,000 to $25,000 — depending on the line speed and tape storage requirements — in addition to other insurances that a user may subscribe to.

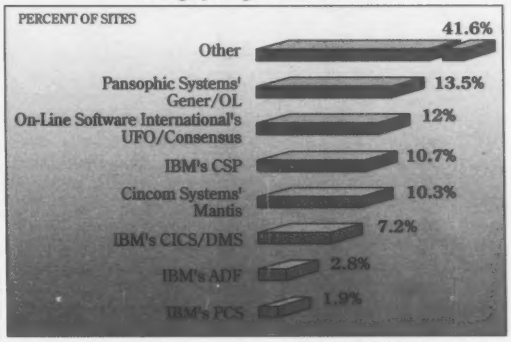
Additionally, the need for electronic vaulting may be absent in all but the most sophisticated user. "It's all hype," said Paul Catalano, president of Vital Records, Inc. in Hillsboro, N.J.,

Continued on page 26

Data View

Neck-and-neck

Among approximately 3,500 U.S. IBM and plug-compatible mainframe sites surveyed that use commercial application development tools, no single package is a clear leader



SOURCE: FOCUS RESEARCH SYSTEMS, INC.
CW CHART

4G-FLOPS supers launched

BY JAMES DALY
CW STAFF

TOKYO — Fujitsu Ltd. unveiled a new weapon in the race to provide more computational muscle with its recent announcement of a series of supercomputers that the firm said offer more than twice the performance speed of its current models.

The eight-member VP2000 series sports a vector-processing speed of 4G floating-point operations per second (FLOPS) in a single processor, more than doubling the 1.7G-FLOPS peak performance of the firm's VP series E model, Fujitsu officials said.

Four models are also based on Fujitsu's newly developed dual-scalar-processor architecture. This design adds a second scalar unit to the typical uniprocessor configuration of one scalar unit and one vector unit, thus enabling system throughput to be doubled, the firm said.

Continued on page 26

Inside

- Hypermarkets pose special MIS challenge. Page 25.
- A medical records system that doctors enjoy. Page 25.
- Integrated Business Computers unveils a multiuser supermicrocomputer. Page 30.

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Data View

Program training

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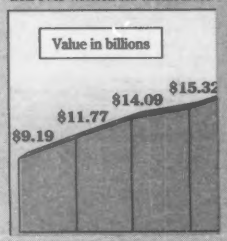
er users in a room and eventually
they will duplicate every applica-
tion ever written for themselves



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NEWS

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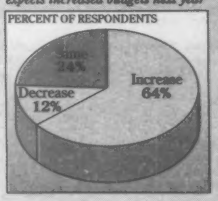

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HARD TALK

J. A. Savage

The hitch to a switch

Other Japanese high-tech companies, circling like vultures over the limp old lion of the U.S. economy, are on a mission to learn American culture and marketing techniques, but Hitachi is not the sort to jump into new situations.

So if the rumors are true about a Hitachi takeover of National Advanced Systems, the mainframe user base can expect a slow and conservative transition.

Hitachi has been dragging its feet in assimilating U.S. sales know-how and incorporating non-Japanese into its fold. This lack of aggressiveness is important if, indeed, the rumors turn out to be true and Hitachi buys out NAS.

IBM and Amdahl, currently the only competition for NAS, would be quite happy with a Hitachi rival; it would be like facing McHale's Navy after battling the U.S. 7th fleet.

"Hitachi?" "Marketing?" That, followed by a great belly laugh, is the standard answer to the company's effectiveness.

For instance, one recent addition to Hitachi's U.S. staff knew so little about the product he was supposed to market that he asked a journalist how he should go about it. Perhaps a Hitachi-owned NAS will have field representatives asking users

Continued on page 26

Medicomp: What the doctor ordered

ON SITE

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The problem with most medical records systems is that doctors do not like to use a keyboard to enter data. But the corporate medical director for C&P Telephone Co. here may have that problem licked.

C&P's Bickelmann

The trick, said Dr. Albert G. Bickelmann, is to have patients, nurses and doctors fill out questionnaires the same way students mark their answers in standardized tests: They use a No. 2 pencil to blacken a circle next to the proper answer, the page is scanned by a dot reader and, eight seconds later, the data has been entered into the computer.

"This is the first time that I've been encouraged about the use of computers in medicine, because we have a way to get the data in," he said.

Working with Medicomp of Virginia, Inc., Bickelmann has developed several dot-reader forms that enable patients to fill in an extensive medical history, after which nurses fill in laboratory data and test results and doctors fill in results of the physical examination.

Now that doctors have a comfortable input method, they can reap the benefits of a sophisticated medical records system that also includes artificial intelligence features to assist with diagnoses, Bickelmann said.

The software, called Medicomp and commercially introduced in November, was written during a 10-year period by Peter Goltra, president of Medicomp in Fairfax, Va. C&P Telephone paid $125,000 for its 15-terminal system. The latest version, 5.0, is written in C and runs under AT&T Unix System V, according to Medicomp officials.

Designed for hospitals, clinics and corporate health administrators, the package includes integrated modules for pharmacy and laboratory data, patient records and diagnostics.

"I think it has marvelous potential," Bickelmann said after working with the software for the past 18 months. "Despite the headaches of learning the system and trying something different, eventually it will save doctors an awful lot of time, and they'll be able to do their jobs better. But first," he added, "you have to convince the users that it's going to be useful."

At C&P Telephone's headquarters here, Medicomp runs on an IBM Series/1 and handles records for about 15,000 employees, Bickelmann said.

He acknowledged that the Medicomp system still has some bugs to be worked out. "We're still not where we want to be in terms of training and function,"

Continued on page 27

Hypermarket challenge

Giant all-purpose stores raise MIS ante

BY LAWRENCE STEVENS
SPECIAL TO CW

Hypermarkets — huge retail stores surpassing the size of largest department stores — are a full-grown phenomenon in Europe but are just beginning to appear in this country. The growing trend may mean that MIS staffs at more than a few conventional retailers will someday be faced with the special challenges of supporting this new breed of retail operation.

Hypermarkets are distinguished from supermarkets or department stores by their large size — about 60,000 square feet on average — and wide range of products and services. In hypermarkets, food, soft goods, hardware and appliances coexist with services such as dry cleaning, photo processing and haircutting.

Carrefour, a French hypermarket chain with 43 stores in Europe, now has an outlet in Philadelphia, and Walmart, a U.S. store chain, has one hypermarket in Bentonville, Ark., and another in Garland, Texas. Meanwhile, Auchan, a West German company with 12 stores in Europe, is said to be considering opening a U.S. branch.

In many ways, the information systems requirements of hypermarkets are similar to those of other large retail organizations. But two aspects of hypermarkets pose unique challenges: the diversity of products and the large number of price lookups performed at any given time.

Covering the bases

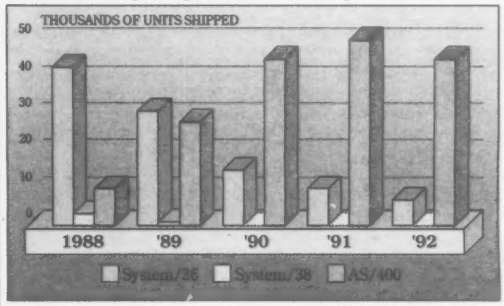
Thomas Friedman, publisher of the "Retail Systems Alert" newsletter, notes that it is no mean programming feat to create a system that is both sufficiently accurate and user-friendly to permit checkout personnel to deal with price per pound in foods, price per item in hard

Continued on page 27

Data View

Follow-on catches up quickly

Shipments of IBM AS/400s are projected to outstrip those of the system's predecessors in just two years



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Savage

CONTINUED FROM PAGE 25

how to best use their mainframes.

So what would that mean to you, dear mainframe user? It means that while the field reps may not actually be asking you about how these things work, they may be difficult to find while gearing up to a new company.

If you already have a NAS machine and are anxious for the fastest compatibility with IBM's latest breakthroughs, a Hitachi takeover would have you cooling your heels. NAS' biggest contribution to the company is designing the IBM-compatibility specs for Hitachi to incorporate. IBM compatibility is not Hitachi's forte.

The quality of the machines will not change, and they may even get cheaper. With the strong Japanese yen, Hitachi can manufacture in the U.S. — and already is — with economies like that of a U.S. company manufacturing in Taiwan.

Beyond the marketing lessons, Hitachi would face more deeply rooted phenomena in American culture — its largest corporation, IBM, and the U.S. government's fear of contracts with Japanese companies.

While IBM can certainly hold its own, analysts think the elusive government prejudice is a force beyond the rules of capitalism. The government's fortress is built with xenophobia and a logic that is not applied to firms from other countries. Let a Japanese company try the same bids and it's great shades of the last World War.

Both Hitachi and Fujitsu, its Japanese rival, have skirted the issue by selling products through U.S. companies — respectively, NAS and Amdahl.

Take your choice

If Hitachi buys NAS, it faces three possibilities: The U.S. may define procurement restrictions more clearly, with either a good or bad effect on Hitachi; Hitachi could bow out of seeking government business; or it could continue selling processors to the government with today's restrictions, much as Vion Corp., a Washington, D.C., systems integrator, does today.

Then again, if Hitachi does not buy it, NAS is going to have a tough time clawing its way back to revenue respectability. It is unlikely that NAS' parent company, National Semiconductor, could fund it to a higher marketing profile, because National Semi itself is far from flush.

It is clear to NAS watchers that something has to happen. While Hitachi was a dark horse until recently, it may win the race, but to what avail?

The true prize — the company's user base and loyalty — will be more difficult to win than just buying the company in name, and Hitachi is going to have to be more savvy in the U.S. market than it has shown in the recent past to make it worth anyone's bet.

Savage is a *Computerworld* West Coast correspondent.

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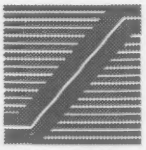

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4G-FLOP

CONTINUED FROM PAGE 21

The supercomputers run on Fujitsu's proprietary MSP operating system as well as Unix. They can reportedly handle a maximum main storage capacity of 2G bytes and feature a system storage capacity of 8G bytes.

Analysts praised the offerings for their ability to exploit leading-edge technologies. "The most interesting thing about the machine is its very aggressive use of very advanced technology — circuit technology in particular," said Omri Serlin, president of Itom International, Inc., a research and consulting firm based in Los Altos, Calif.

The series uses 1M-bit static random-access memory chips boasting a 35-nsec access time, Fujitsu officials said, while the CPU is peppered with high-density chips.

Some uniprocessor models are scheduled to be available in the fourth quarter of 1989, but the full range will not be ready for shipment until the second half of 1990.

Although no final purchase prices were released by the firm, rental prices for the series will begin at $300,000 per month.

Vaulting

CONTINUED FROM PAGE 21

and the man most often described as the father of the technology. "Electronic vaulting should be used as a redundant service to achieve an operational advantage," he said.

Still, the possibility of downtime is an often frightening specter to an MIS manager. A recent study by the University of Minnesota claimed that 93% of businesses that lost the use of their computer for 10 days filed for bankruptcy within a year; half filed immediately.

But significant strides have been made in getting electronic vaulting into the general marketplace. Total Assets Protection, Inc. has offered nearly instantaneous interactive access since 1986, and in the past year, disaster recovery firms such as Comdisco Disaster Recovery Services, Inc. and Sungard Recovery Services, Inc. have unveiled similar products.

Additionally, there were recent rumors that IBM may enter the disaster recovery business with an electronic vaulting offering [CW, Oct. 17].

In June, the technology also got a large leg up when it was introduced into New York's competitive banking environment [CW, June 6] with both Comdisco and Sungard offering competitive 24-hour, seven-day-a-week vaulting services.

But electronic vaulting's proponents said it will not remain the exclusive territory of such large data-intensive institutions. "Everyone thinks it's the banking industry that's really driving this, but it's not," said Robert Miano, president of Comdisco Computing Services Corp. "We have clients in any application where it's critical that you cannot lose data: the grocery business, railroad industry — you name it."

There are essentially three levels of electronic vaulting available. Electronic journaling captures and stores only a customer's most critical transaction data off-site on a continual basis.

Under electronic file transfer, an institution can automatically update file stores off-site at various times throughout the day.

Finally, database shadowing carries the technology to its furthest boundaries yet, by providing for the processing of transactions at the backup database as they are received. This results in an up-to-the-minute image of all critical applications.

Gibson

CONTINUED FROM PAGE 21

ment was reached between Relational and DEC's Database Storage Group, rather than with DEC as a corporate totality. Another group within DEC could make an exclusive agreement of its own if it wanted to, I was told. Thus, many groups within DEC can make exclusive agreements, but none are exclusive from the point of view of the corporation. That makes sense: There are a lot of exclusive agreements, so none of them are exclusive.

The impression I have from conversations with all parties is that the word exclusive meant a lot more to Relational than it did to DEC.

Indeed, Cullinet might have approached DEC to strike the identical deal that Relational had but could not, because the wording of the DEC-Relational deal prohibited it. To that extent, the DEC-Relational deal certainly is exclusive.

What DEC wants to accomplish is a difficult high-wire act. On the one hand, it wants as many strong agreements with software vendors as it can get: It wants a thousand flowers to bloom in its software field. On the other hand, it occasionally must offer something in return to these software firms.

Hence, the kind of deal struck with Relational. Such deals, however, risk antagonizing the other vendors. Reportedly, upon hearing of the DEC-Relational agreement, a furious John Cullinane was on the phone to DEC, claiming that DEC had violated a policy against making exclusive agreements.

But how angry can a software vendor get? It can stop writing software for DEC equipment, thus cutting off a stream of its own revenue. That wouldn't make much sense. The thousands of flowers blooming may resent each other, but they cannot afford to turn their back on the sun.

Back to the TPC. In this space two weeks ago, it was noted that the Transaction Processing Performance Council, which calls itself the TPC, is charging its $5,000 annual membership fee as of Jan. 1, regardless of the dates on which various members joined in the past year, a fact that had rankled a member or two. Omri Serlin, the group's organizer and leader, responded, "In general, I know of no industry consortium that is able to manage on such a low fee." He adds that knowing a single dues anniversary for all will remove questions of who is paid up when votes are taken.

Gibson is *Computerworld's* senior editor, software.

Hypermarket

CONTINUED FROM PAGE 25

goods and the variety of sizes and colors in soft goods. "To create a viable system," he says, "you have to build one from the ground up that takes into account the extreme variety and number of products."

Friedman estimates that a supermarket may have about 20,000 stockkeeping units (SKUs), but a hypermarket may have more than one million. "You can't increase a database system 50 times with just a few maintenance changes," he says.

Bob Smith, marketing manager at ICL, Inc., a Stamford, Conn.-based company that specializes in installing computer systems in hypermarkets, adds that the problem of the large number of SKUs is compounded by the large number of registers.

Hypermarkets typically have 60 registers, compared with 10 to 12 in supermarkets or retail stores. This can cause wild fluctuations in the number of price lookups throughout the day. "You have to have a system that won't degrade when the number of lookups surges from 10 each second to 60," Smith says.

Smith's answer is to distribute as much of the operation as possible, dedicating microcomputers to specific activities such as price lookups, inventory, communications, receiving and file maintenance.

In the interest of speed, memory should be random-access memory-based rather than disk-based, Smith says; 4M bytes of memory per machine is sufficient to handle each operation.

Fault tolerance, although it might be seen as a luxury in most retail operations, has to be a consideration in hypermarkets, in which the impact of one system failure could affect several hundred customers at one time. For that reason, Smith advocates duplicate processors running in tandem.

"I wouldn't want to be there when 600 people in line who have spent two hours shopping are told that the registers will be closed for 15 minutes while you get the system back up," he says. "Do that a few times and people will blame it on the size of the store, and they'll go back to their supermarkets and department stores."

Another way to protect processing time and also plan for future expansion is to have smart terminals at the registers. Smith recommends 512K-byte microprocessors, which will be sufficient to hold an entire customer transaction along with any instructions needed for handling the transaction. The data can then be held at the register until the customer pays. This allows the clerk to void any item on the list without having to make a call to the controlling computer, and the batch mode also makes more efficient use of communications resources.

A further advantage of having smart terminals at the registers is that, because some of the burden is assumed by the unit itself, increasing the number of registers does not strain the system as much as adding dumb registers does.

Intelligent registers that are, for example, programmed in Cobol rather than with firmware can provide more flexibility for new tracking and promotional plans.

"There might be mailings to customers. There might be promotions in which coupons are automatically generated depending on what products the customer buys," Friedman says.

Hypermarkets, unlike retail store chains, are their own distribution center. That means that those who build systems for them will have to consider issues such as electronic data transfer and just-in-time inventory, which are normally dealt with on a regional or national level.

Friedman and Smith agree that the hypermarket phenomena will grow in this country. But Friedman warns that it is difficult to say from the European experience exactly what form hypermarkets will take in North America.

"The key to success," he recommends, "is flexibility. The system will have to be able to change to meet new marketing needs."

Stevens is a free-lance writer based in Springfield, Mass.

Medicomp

CONTINUED FROM PAGE 25

Bickelmann said, "but we're coming along quickly because of the dot-reader system."

Eventually, the system will be made available through a dial-up network to the company's six other clinics. It will then cover 32,000 employees, who get free medical exams at the company clinics.

"Each of the doctors in those clinics reports to me, and I want them to have the advantage of the marvelous diagnostic capability that artificial intelligence offers them," Bickelmann said.

In essence, Medicomp can match a patient's medical situation against a knowledge base of thousands of diseases based on symptoms, physical findings and lab results. The result is a list of possible diagnoses ranked in order of likelihood.

"So far, there has been no computer system introduced with enough artificial intelligence to outdo a doctor. [Medicomp] may not do it, but it's awfully close," Bickelmann said. "You can get an awful lot of suggestions from the computer, including lists of diseases that the doctor may not have ever seen."

Another advantage of the system is that it can identify all employees who, for example, take a particular medication. This can help spot employee health trends and take steps to curb absenteeism, the corporate medical director said.

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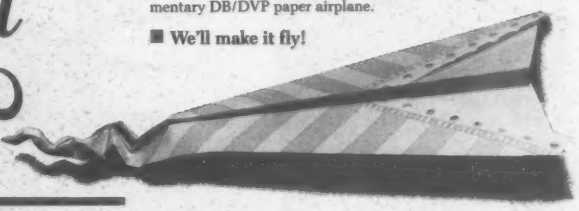

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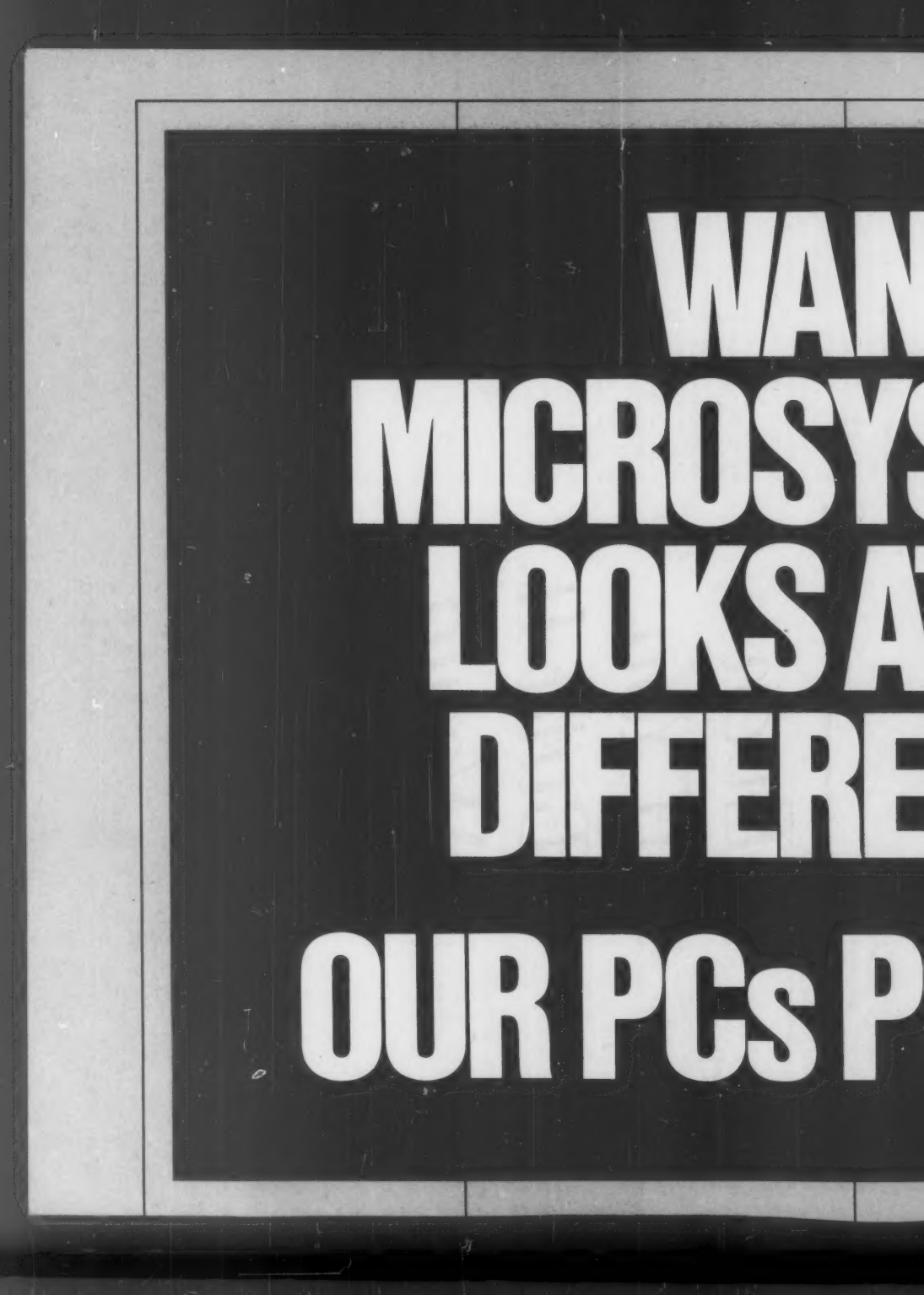
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NEW PRODUCTS — SYSTEMS

Processors

A multiuser, supermicrocomputer with a 16-MHz Intel Corp. 80386 processor is now available from **Integrated Business Computers, Inc.**

The 32-bit **386:LE8** series runs with either The Santa Cruz Operation's Xenix V or the Theos operating system, the vendor said. The computer supports six or eight ports and is priced from $4,100 to $5,800, depending on system configuration.

IBC, 21621 Nordhoff St., Chatsworth, Calif. 91311. 818-882-9007.

NEC Information Systems, Inc. has announced price reductions ranging from 15% to 23% for designated models of its **Astra XL** series of Unix-based multiuser systems.

The systems, based on Motorola, Inc. 68020 and 68030 microprocessors, are reportedly capable of supporting up to 64 users.

The models affected by the price reductions include the Astra XL/8, XL/16 and the XL/32, which are now priced at $7,995, $9,995 and $12,995, respectively. The company noted that the list price from the Astra MicroXL remains at $5,895.

NEC, 1414 Massachusetts Ave., Boxboro, Mass. 01719. 508-264-8000.

A single-board coprocessor that accelerates compute-intensive vector and scalar operations for Motorola, Inc.-based VMEbus hosts, including Sun Microsystems, Inc. workstations, is now available from **Mercury Computer Systems, Inc.**

The **MC-VM-I/O** is an extension of the vendor's MC3200 family and was designed for users who need to acquire data directly and in real time from devices such as A/D converters and image digitizers. The two 16-bit I/O ports reportedly permit data transfers at a combined rate of 40M byte/sec.

Scheduled for delivery in the first quarter of 1989, the MC-VM-I/O is priced from $13,335.

Mercury, 600 Suffolk St., Lowell, Mass. 01854. 508-458-3100.

NEW PRODUCTS — SOFTWARE

Database management systems

A performance modeling system for Cullinet Software, Inc. IDMS/R users has been announced by **DBMS, Inc.**

Called **DB/DVP**, for Database Design Validator and Predictor, the software reportedly assists users in determining which application design and hardware configuration is best suited to their needs, according to the company.

The program utilizes on-line menu-driven screens and includes logical schema and design generation, physical database analysis and device media allocation capabilities.

DB/DVP costs $55,000.

DBMS, 600 Olympian Office Center, 4343 Commerce Court, Lisle, Ill. 60532. 312-505-3267.

Intex Solutions, Inc. has released **Version 2.0** of **SQL:Docufact**, which is the organization's tool for documenting and modifying IBM's SQL/DS and DB2 database structures and migrating applications.

The program downloads data to a personal computer, according to the company.

Release 2.0 was designed specifically to provide SQL/DS users with reorganization and reclustering capabilities, the vendor said.

Monthly licenses for SQL:Docufact range from $300 to $500; perpetual licenses are priced from $7,500 to $12,500, depending on CPU group, the company said.

Intex, 161 Highland Ave., Needham, Mass. 02194. 617-449-6222.

XA Systems Corp. has released a mainframe software productivity tool for IBM DB2 users.

Dubbed **DB2-Xpert**, the product assists in application development and runs as a dialogue under IBM's ISPF using menu-driven, ISPF-like displays, the vendor said.

The software provides edit, browse and extract capabilities and loads DB2 tables under TSO/ISPF, according to the company.

DB2-Xpert is scheduled for shipment in February and will have a price tag of $28,000.

XA Systems, 983 University Ave., Los Gatos, Calif. 95030. 800-344-9223.

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MICRO BITS

Douglas Barney

Pure PC wimpiness

It's time to clone the Mac! Often when you hear about someone getting ready to buy a personal computer, they talk in loving terms about Apple's Macintosh. That is because deep down, most people want a Mac. But these same people turn around and buy an IBM clone through the mail from someone like Dell Computer.

Is Dell's better? If sophisticated software and advanced user interface techniques are any measure, heck no. But if the measure is pure value, then Dell or IBM or any other PC cloner is the better buy. That's the beauty of competition. For less than $3,000, users can pick up a fast IBM-compatible system with high-resolution color graphics, a 40M-byte hard drive and expansion slots galore.

For the price of a similarly equipped Mac, you could buy a Hyundai with air-conditioning and toss in a used DEC Rainbow.

In the IBM-compatible market, the competition is gloriously cutthroat. Each supplier, including IBM, is forced to give more and more for the same price or else get out of the busi-

Continued on page 36

Adapting tools to work groups

Multifaceted groupware designed to suit office needs under development

BY MICHAEL ALEXANDER
CW STAFF

End users often have had to adapt their working habits to fit their software. Now, an entire new class of software promises to adapt to the working habits of end users. It is called groupware, and vendors in the market claim that their programs can turn personal computer networks into powerful systems for coordinating the work of several end users.

Cooperative ventures, no matter what field of endeavor, are based on patterns of work such as setting goals, scheduling tasks, monitoring progress and performing similar activities. Groupware aims to support these cooperative efforts by coordinating the activities of each member within a group. This coordination of effort goes beyond simply sharing word processing, spreadsheets, electronic mail and other applications common to PC networks.

"We're building a product that lets end users create a coordination environment based on patterns that underlie how people work," explained a spokesperson at Coordination Technology, Inc. (CTI), which is based in Trumbull, Conn.

In this coordination environment, for example, senior executives could attend a meeting electronically and exchange information derived from a wide variety of sources. This information, ranging from voice to video, could be integrated into an action plan that could then be routed to middle managers who would implement the decisions of the group. Each middle manager would receive a transcript of the meeting tailored to the goals of his department.

In another scenario, an information center manager could provide support and training activities that are precisely geared to the needs of each individual in the coordination environment. A question from one end user in the group could be automatically directed to the end user most likely able to answer it.

"It's a whole new way of working in an electronic environment," the CTI spokesperson said.

'Fascistware'

But this ability for end users in the group to urge their colleagues to take specific actions, to monitor each other's work and similar activities has led some pundits to deride groupware as "fascistware."

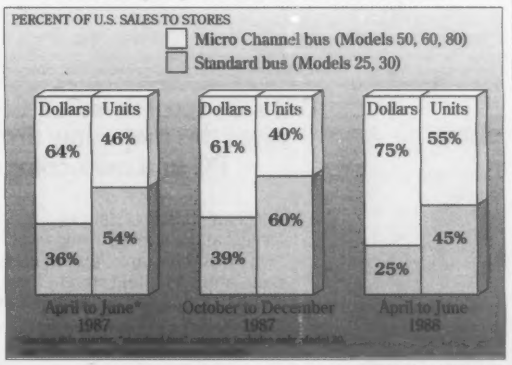
A year ago, the market for groupware barely existed; there were only two vendors selling this new class of software. Those pioneers — Action Technologies, Inc. in Emeryville, Calif., and Conetic Systems, Inc. in Leandro, Calif. — are about to face considerable competition from

Continued on page 37

Data View

IBM's magic bus

Quarterly audits of IBM PS/2 sales to the store channel reveal MCA models have quickly dominated both unit and dollar shares



SOURCE: IMS AMERICA LTD.
CW CHART

Kaypro airs Micro I space-saver

BY DOUGLAS BARNEY
CW STAFF

SOLANA BEACH, Calif. — Most foot-wide computers that weigh in at 15 pounds are called laptops or portables. Not Kaypro's. Recently, Kaypro Corp. announced what it calls the world's smallest desktop system.

While most computers of this size are designed for portability, the Kaypro Micro I is aimed at saving desk space, the firm said. As more and more people are crammed into smaller and smaller cubicles, every inch counts.

The Micro I saves space in several ways. It uses a high-resolution LCD display, similar to ones found on laptops. Instead of the three to five expansion slots that most personal computers contain, the Micro I comes with just one. Instead of bulky 5¼-in. floppy drives, the Micro I uses two 720K-byte 3½-in. floppies. If users prefer a hard disk, they can swap it for one of the 3½-in.

Continued on page 36

Inside

- Zirco to take laptops for a ride. Page 33.
- Softbridge's Bridge/386 gives batch languages a touch of class. Page 33.
- Proteus Technology expands PC line. Page 40.

CICS Educator Lemuel Skidmore Found A Better Way

Developing CICS applications is tough. You have to fight for tight mainframe resources. Slow response time kills productivity. And you live in danger of accidentally bringing the system to a crashing halt.

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A great CICS training tool. A great CICS development tool. Skidmore knows. "When CICS goes down at a client site, users sit at the mainframe terminals twiddling their thumbs. In the meantime, I keep writing, compiling and testing CICS applications with PC-CICS. If I bring my system down, I just reboot the PC and keep on working."

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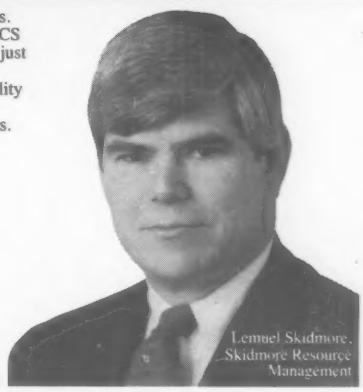

Lemuel Skidmore, Skidmore Resource Management

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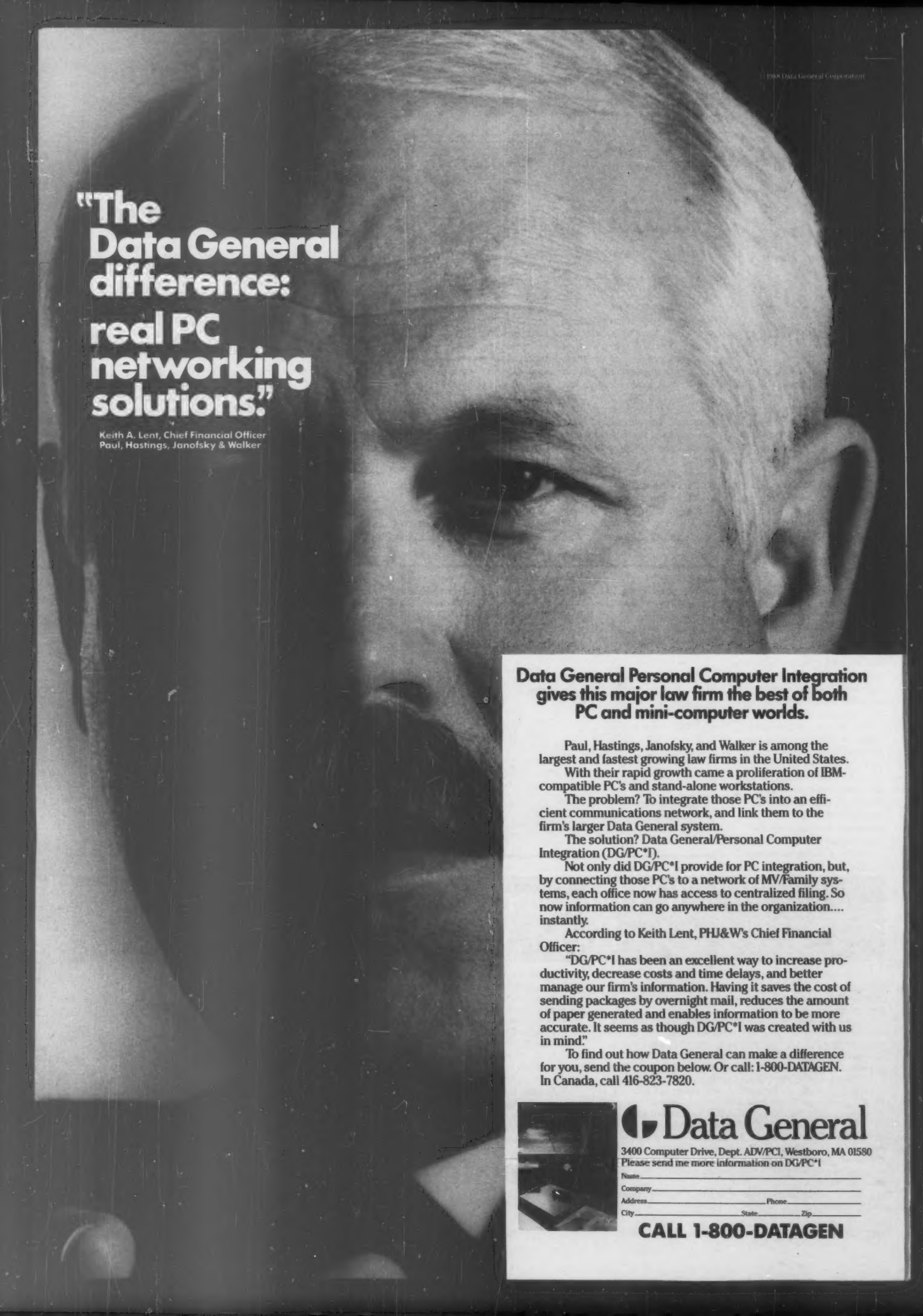

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SMALL TALK

Mort Rosenthal

Industrial New Year's resolutions

Now that we're in the thick of the holiday season, many people are probably too busy to find time to reflect on the past year or plan for 1989.

With all of these very busy people in mind, I decided to jot down what I believe are some badly needed industry New Year's resolutions:

• For the makers of OS/2: Give the customers what they need.

OS/2 promises to deliver the platform for the multiuser, multitasking solutions that customers have been asking for. There's really no question about customer requirements; the question is when OS/2 will ship and whether the transition will be so rocky that it won't be worth the disruption to the installed base.

While I'm on the subject, where are the tools? Customers tell us they want to start developing applications today for Microsoft's Windows and IBM and Microsoft's Presentation Manager. But so far, all they have gotten are piles of documentation.

Microsoft and IBM, as well as other third parties, must resolve in the year ahead to deliver better applications development tools needed by the customer.

• For the Extended Industry Standard Architecture and IBM Micro Channel contingents: Please shut up.

For Ph.D.s and electrical engineers to publicly debate the pros and cons of each bus is certainly not useful for the customer. What exactly are the benefits of such an exchange? The customer needs one bus, not multiple buses. It seems that this debate is being conducted for the sole purpose of letting each contingent toot its own horn.

Please don't expect customers, who are trying to use their personal computers for increasingly important work, to feel good about this debate. It doesn't serve their purposes at all. Have these people forgotten their constituencies? Let's hope that this debate is resolved quickly.

• For the Unix suppliers: Decide on a standard and then move on.

Continued on page 37

Caution: Computer on board!

New company delivers car seat that cradles your portable in lap of luxury

BY JULIE PITTA
CW STAFF

DENVER — The ideal holiday gift for that hard-to-please businessperson on your list might just be a car seat for your laptop computer.

Zirco, Inc., a 1½-year-old start-up, has designed a car seat to cradle most laptops on the market today. The car seat was described by Zirco President Mark Zirinsky as "a cross between a desk and a baby's car seat." "It just holds a laptop instead of a child," he said.

To complete the package, Zirco has added a power supply that plugs into a car's cigarette lighter for laptops that cannot run on battery power.

The car seat sells through retail outlets for $79.95; the power supply is an additional $179.95.

The laptop car seat and power supply is Zirinsky's brainchild. Before starting Zirco, Zirinsky wrote technical manuals and guides and consulted for high-technology companies in the Denver area. He found himself on the road frequently.

Close call

"One day when I was driving to an appointment, I had to hit the brake rather suddenly," Zirinsky remembered. "The laptop flew off the car seat and hit the windshield."

After the incident, Zirinsky called a number of retail outlets looking to find a car seat for his computer. He was unsuccessful. Thus, Zirco was born.

Zirinsky said he is surprised by how well the product has been accepted so far. About 30 domestic retail outlets now carry the product. It has been particularly popular with salespeople and journalists, he noted. Although he would not disclose shipment figures, Zirinsky said Zirco will break even this year.

Zirco has also attracted the attention of the media. Recently, *Newsweek* magazine, in a recent article on the laptop boom, mentioned the car seat.

"The [car seat and power supply] package is very powerful for us," he said. "It really is a trend. People are working out of their cars and using computers.

Denver policemen wish they could turn back the clock. "I find it hard to believe that people are working on a computer and driving at the same time on these roads," Denver police officer John Wyckosf said.

Zirinsky said he is not encouraging bad driving habits. On the contrary, the car seat promotes safety, he contends. "It will at least let people focus their attention on avoiding an accident, rather than protecting their computer," Zirinsky maintained.

Firm endorsement

Vicky Mason, a systems software product manager at laptop manufacturer Grid Systems, Inc., said Grid is endorsing a similar product from Buffalo, N.Y.-based Mead-Hatcher, Inc. Grid said it selected the $98.50 Mead-Hatcher laptop car seat because it is adjustable and is made from steel, as opposed to molded plastic.

Also, Mead-Hatcher's product has been selected for use by Upjohn Co., a large Grid customer. Mead-Hatcher is a long-established firm, Mason said.

Mason said the car seats are practical, especially for traveling salesman.

"If you've been visiting a customer, you might want to enter the order into your laptop when you get back to the car," she said. "You can't really do it on your lap because the steering wheel is in the way."

Users eagerly discover Softbridge's capacity

BY WILLIAM BRANDEL
CW STAFF

Batch languages may be a bit boring, but the Bridge/386 batch language from Softbridge Microsystems Corp. is allowing some firms to exploit the exciting world of multitasking, graphical user interfaces and sophisticated data exchange.

Pfizer, Inc., a New York-based chemical company, has been trying to consolidate financial data from its 80 worldwide subsidiaries. This task is becoming increasingly automated with the help of Bridge/386. As it stands, the information is relayed either over a General Electric Co. network or sent by disk.

Bridge/386

Price: $299

- Requires MS-DOS 2.0 or higher
- Supports Microsoft's Windows/286, Windows/386
- More than 2M bytes of memory recommended

Scott Bedrick, a project analyst at the company, then uses the Bridge product to automatically upload information to the mainframe database. With the help of Bridge, Bedrick said this program took him less than three weeks to develop.

That is only the beginning. Bedrick is also using the product with Microsoft Corp.'s Excel spreadsheet program to build a common-user shell for an executive workstation. These personal computers would include preformatted pull-down menus and pop-up windows and would pull data from Lotus Development Corp.'s 1-2-3 spreadsheet. Pfizer management would then have easy, direct access to the company's most up-to-date financial information.

Remote support

Steve Morse, senior technical officer at Manufacturers Hanover Corp. in New York, is using the product to support remote loan offices on a local-area network. Morse is using the Bridge product to build a pop-up window environment, from which account officers will be able to access data using object-oriented banking terms located on the screen. "We haven't even scratched the surface yet in what we can do with this," Morse said. He added that he has tried other products, "but nothing has come close to Bridge's performance."

Despite Softbridge claims that the product is easy to use, Morse cautions only experienced users to crack the shrink-wrap. "This is not for the end user; you need a little program development to develop with it," Morse said. "But that's not necessarily a reflection on this product. Object-oriented programming still has a way to go."

Some vendors are also jumping on the Bridge/386 bandwagon. Pawan Gupta, applications software manager at Kofax Image Products, Inc. in Irvine, Calif., is using Bridge/386 to develop an end-user interface for an image processing product. Gupta said the package would be advantageous to PC software programmers because most are already familiar with the DOS batch language.

In addition to building the user interface, Gupta is also using the product to test the hardware and software he develops.

"It is very interactive," Gupta said. "You can go into the script and see automatically where your development errors are. With this, you can step through development very quickly."

The Bridge/386 product follows a similar offering for 286-based PCs from Softbridge, which does not include multitasking and is limited to task-switching between Intel Corp. 80286- and 8086-based machines. The Intel 80386 version of the product is being packaged with Bridge/286 and a developers tool kit for $695. Without the tool kit, Bridge/386 costs $299, while Bridge/286 is priced at $149.

Put to good use

DOS and Microsoft Windows integration is made possible by Bridge's multitasking and cross-application control. With its own batch language and dynamic data exchange, programmers who can write a batch file can use 386 windowing applications using Bridge/386.

There is full control of each application running under Bridge/386, end users said. For example, if the product is used in conjunction with Windows and has an in-house application running as well, all three are viewable on the PC screen.

Bridge/386 runs on 386-based systems. When used in conjunction with Microsoft Windows/386, it requires more than 2M bytes of memory. It also supports IBM Netbios-compatible networks.

SOFT TIPS

Tuning up Symphony

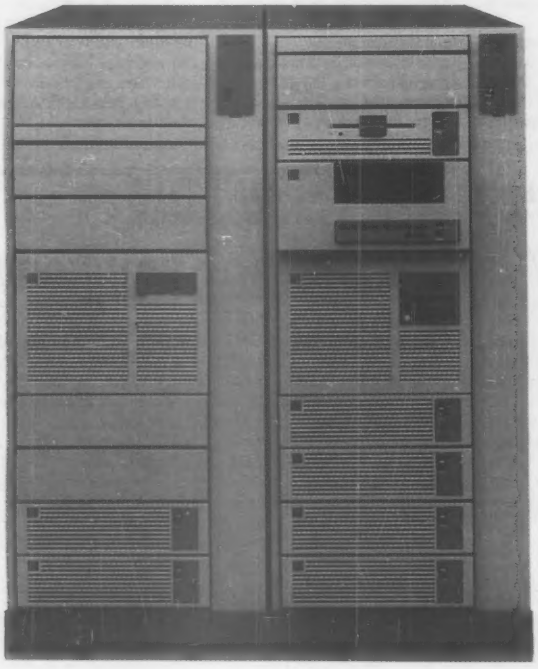
If you use a file frequently and find it inconvenient to pick it from a list every time you boot up, there is a solution.

To automatically load a file when starting Lotus Development Corp.'s Symphony, press F9, Configuration, Settings, Auto-Execute and enter the file name. If you receive the error message "Add-in Cannot be Loaded Because the File SYMPHONY.DYN Cannot be Found," rename the SYMPHONY.DYN file and copy it to your hard disk from the Speller and Outliner disk.

The same thing can be done with macros. To automatically run a macro when loading a file, press F9, Settings, Auto-Execute and type the macro name.

It's called the Application System/400.

Here's why.



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LEGAL: Client Billing, Disbursements, Time Accounting, Financial Monitoring, Deadline Control, Conflict Of Interest Records, Case Management, LEXIS,® NEXIS,® WESTLAW.

INSURANCE: Ratings Procedures, Property/Liability Management, Proposals and Policies Drafting, Application Processing, Advanced Function Policy Printing, Life Management, Health Management, Automated Accounting, Claims Management, Record Maintenance, Rate Report Management, Casualty Claims Control, Benefit and Plan Maintenance, Medical and Surgical Claims Processing, Dental Claims Processing, Prescription Claims Processing, Disability Claims Processing, Diagnostic Tables and Maintenance, Provider Maintenance, Employee Maintenance, Dependent Maintenance, Policy Management, Premium Accounting, Reinsurance Accounting, Disbursement Accounting, General Ledger, Diary Processing. **COLLEGES/ UNIVERSITIES:** Student Recruitment Admissions, Registration, Grades, Scheduling, Student Billing, Accounts Payable, Payroll, General Ledger, Alumni Development, Financial Aid, Degree Fulfillment Control.

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IBM

Barney

FROM PAGE 31

ness. Microsoft's MS-DOS operating system is still subpar, but customers love the values.

In the Macintosh market, Apple is the only supplier in town. It controls the prices, but more importantly, it controls the technology. That is why a low-end Macintosh comes with one floppy disk drive and a tiny black-and-white monitor. And performance? It is so slow, you can watch your car rust while you load a program.

PC wimps

Users who love the Mac's approach to simplicity but don't appreciate the poor price/performance ratio can easily blame Apple. Might as well. But they should also lambaste the cowardice of the IBM cloners that have been too afraid to irk the folks from Cupertino, Calif. Pure PC wimpiness.

Of course, these are the same clone companies that are whimpering about IBM's call for Micro Channel royalties. Get some pride. Clone both, and let the lawyers worry about it.

Besides, what's fair is fair. Are IBM cloners going to let Apple work with firms such as AST Research and Phoenix Technologies to enable the Macintosh to run Microsoft's MS-DOS — but God help you if you clone the Macintosh? This isn't ironic. It's dumb.

Admittedly, the Mac was not worth cloning in its early years. It was pathetically slow and had lousy software. In short, it was a computer for the terminally stupid.

Despite the lack of competition, the Mac has grown up. But the allure of the Mac has more to do with innovative software developers than with Apple's ingenuity. A major advance for Apple is still something like color, a separate monitor, expansion slots or maybe a key pad and cursor keys. Yippee.

Cloning around

While Apple dawdles along, everyone harps on IBM for its so-called proprietary architecture. Come on. IBM lets cloners clone — as long as they don't steal BIOS code — and is even making MCA licenses available in a semiattractive fashion.

But what does Apple, that California-based bastion of hollow counterculture values do? Have its lawyers threaten to sue anybody who even looks like they are cloning the Mac.

That is not the worst of it. Apple, confident about its lock on the market, earlier this year had the gumption to raise prices. Apple shops had to put up with it, while IBM clone shops congratulated themselves for sticking with MS-DOS.

The PC folks can't get away with this type of gouging. With PC clones, you can play one vendor against another. With Apple, you get a price list etched in stone like the Ten Commandments. You will pay, you will not call us with your petty problems and you will blindly follow the technical direction we set.

Hey, instead of the Extended Industry Standard Architecture consortium working toward another 32-bit bus — the Micro Channel and Nubus are just fine — why don't they try cloning the Mac and putting together a huge defense fund? Then at the same time, maybe they could speed the thing up a little.

Barney is a *Computerworld* senior editor, microcomputing.

Kaypro

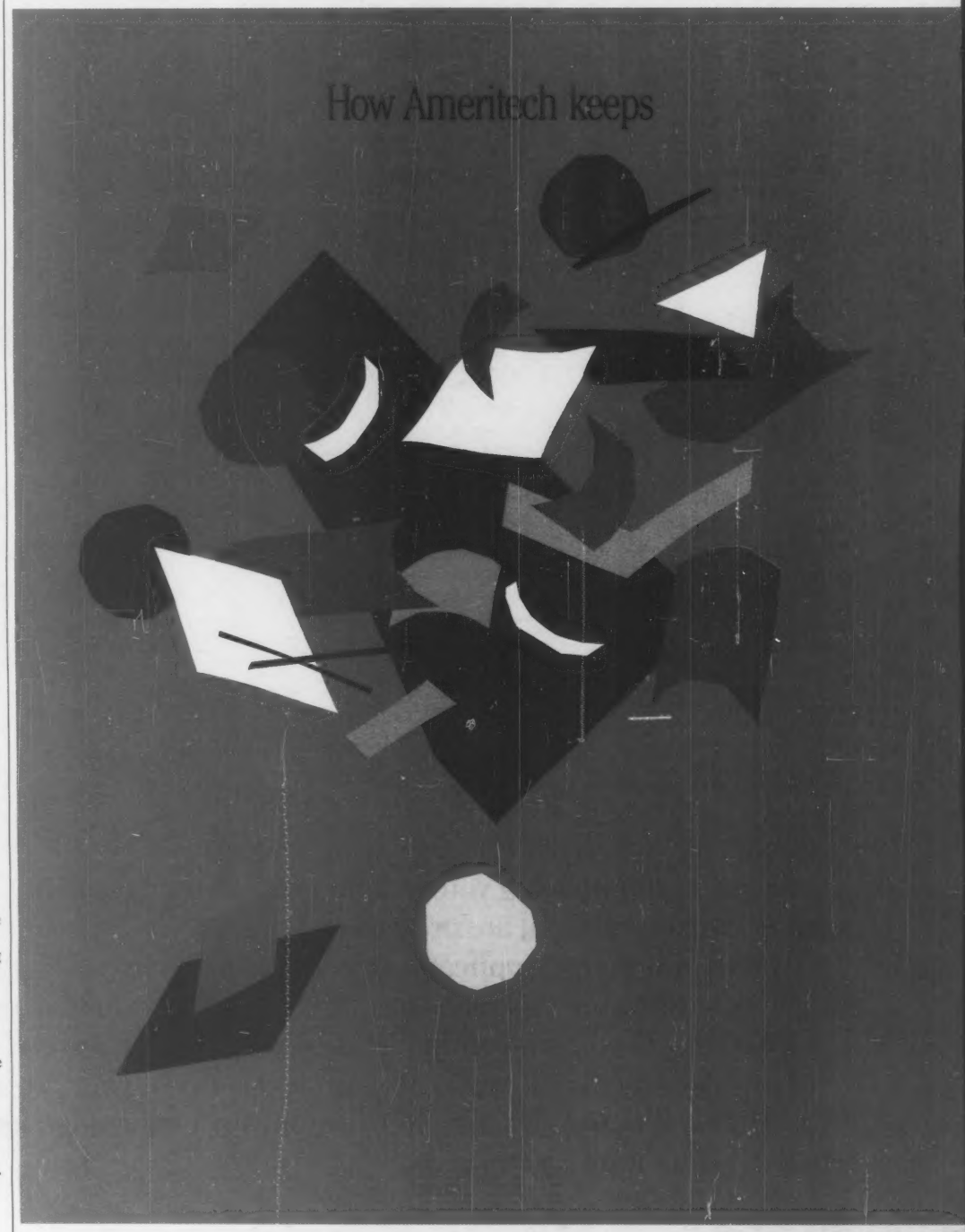
FROM PAGE 31

floppy drives.

The system sells for $799 without a display. An optional LCD screen costs another $249. The product is available now without an expansion slot and is slated to be available early next year with an expansion slot.

The Micro I uses the V-20 processor from NEC Corp., which provides compatibility with Intel Corp.'s 8088. The machine comes standard with 512K bytes of random-access memory, a parallel printer port and an RS-232C asynchronous serial port.

The Micro I will be sold via mail order and will also be available through Kaypro retailers.



Rosenthal

FROM PAGE 33

This could be the year for Unix to make headway in the commercial market. But for that to happen, the industry has to realize that the idea of "multiple standards" is an oxymoron. Unix suppliers must settle on a single standard that can be used across vendor platforms.

Also, Unix is presenting a fairly compelling transition strategy to a multiuser, multitasking platform from the DOS world. It would be nice to see that trend continue, because it keeps the OS/2 camp honest.

• For the PC software vendors: Set realistic shipping dates for new products and then stick to them.

Customers would feel a whole lot better about our industry if the vendors did this. I say, let's forget about the past and start fresh. Now that several of the major vendors have hired on some major-league development gurus, let's see if they can deliver what they promise and in a timely manner.

As for those "killer applications" that are supposed to drive the new platforms, please make sure they are useful instead of merely being designed from a vendor's concept of what is needed.

And while we're on the subject of killer applications, don't forget that there are a lot of little applications that are going to drive the penetration of new products and technologies. These smaller applications need to be delivered too, because they are equally, if not more, important than the killer applications to the customer.

• For the press: Stop making news when there is none.

Please don't analyze new products to death and decide on their fates before they even ship. Please try to take a less sensationalistic attitude toward this business. It doesn't make sense that a vendor could be your darling one week and your worst nightmare the next. Perhaps some semblance of consistency would be more useful to the reader.

• For the customer: Focus more on innovative uses of the new technologies and less on the technology itself.

For customers to gain the maximum benefit of the new technologies, they have to figure out how to better automate the flow of information through an organization and how to store and access information more effectively. They should leave the guru business to the gurus — the analysts, vendors and especially the resellers. These people are far better equipped to handle the big questions such as what is compatible with what and who to go to for help. Customers should tap into this expertise; they're entitled to help with the transition to the new technology, and they should demand that they get it.

• For the resellers: Get ready for an extremely busy year.

Rosenthal is chairman and chief executive officer of Corporate Software, Inc., a value-added reseller of software and peripherals based in Westwood, Mass.

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Adapting

FROM PAGE 31

several companies, according to International Data Corp. (IDC), a market research firm in Framingham, Mass.

Among the companies eyeing this market are Wang Laboratories, Inc. in Lowell, Mass., Wordperfect Corp. in Orem, Utah, and Informix Software, Inc. in Menlo Park, Calif. IDC predicted that Redmond, Wash.-based Microsoft Corp. will soon announce plans to venture into groupware.

The floodgates to what will be a lucrative market will soon open, reported IDC in a recent study. Groupware on local-area networks will account for 23% of the 192,000 licenses shipped worldwide in 1992, IDC said. It also predicted that worldwide revenue for LAN-based groupware will climb from about $24 million in 1988 to $218 million by 1992 — a compound annual growth rate of 87%.

While vendors in the groupware market are likely to tout "increased productivity," they should spend more effort developing standards, IDC added.

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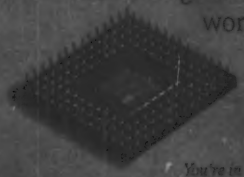

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NEW PRODUCTS

Systems

Proteus Technology Corp. has expanded its line of personal computers with the **286 Provu** and the **386/25MX**.

According to the company, the 286 Provu is a laptop PC based on an Intel Corp. 80286 CPU and offers switchable operating speeds of either 10 or 12 MHz. Weighing approximately 14 pounds, the standard unit is equipped with 640K bytes of random-access memory and a 1.44M-byte 3½-in. microfloppy disk, the vendor said. It is priced from $1,995.

The 386/25MX is based on Intel's 80386 processor and is said to operate at 25 MHz with zero-wait state. The machine is expandable to 8M bytes on the system board and incorporates a 32-bit memory slot with expansion capabilities up to 32M bytes. The base model is priced at $4,395, which includes 1M byte of RAM and 32K bytes of cache memory. A floor-stand version is also available.

Proteus, 377 Route 17 S., Hasbrouck Heights, N.J. 07604. 800-782-8387.

Software applications packages

Data Design Associates, Inc. (DDA) has announced that its line of mainframe financial software is now able to run on IBM personal computers and compatibles.

The applications include the company's general ledger, accounts payable, purchasing, fixed asset accounting and project accounting products. The current release reportedly allows users to download and upload entire files and is priced from $10,000 to $15,000 per package for companies that purchase DDA mainframe software.

DDA, 1279 Oakmead Pkwy., Sunnyvale, Calif. 94086. 408-730-0100.

Applied Business Technology Corp. has announced **Version 3.0** of **Project Workbench-Advanced System**, the company's project management software system for IBM Personal Computers and compatibles.

Enhancements include resource management, tracking and decision support functions. The software is not copy-protected, according to the vendor.

Project Workbench-Advanced System 3.0 costs $1,275.

Applied Business Technology, 361 Broadway, New York, N.Y. 10013. 212-219-8945.

EWDP Software, Inc. has released **Version 7.6** of **Filebase**, its variable field length database management program.

New features reportedly include "table look-up" functions designed to reduced the number of keystrokes when entering recurring data. The software requires 128K bytes of memory and DOS 2.1 or higher. Both 3½-in. and 5¼-in. disk formats are available.

Filebase 7.6 costs $99.

EWDP, P.O. Box 40283, Indianapolis, Ind. 46240. 317-872-8799.

Software utilities

A software utility that prints envelopes in an Epson America, Inc. dot matrix printer environment has been announced by **International Systems Services, Inc.**

The **Envelope Printer 1.03** reportedly prints addresses from a mail-merge file one envelope at a time and prints envelopes in end-feed position on the printer with bit-image print mode.

The package requires DOS 2.0 or higher and is priced at $24.95.

International Systems, P.O. Box 4920, Tulsa, Okla. 74159. 918-744-8528.

Pinetree Software Canada Ltd. has reduced the price of its **Maximizer** client manager software.

The package, formerly $295, is now available for $195. According to the vendor, the software allows IBM Personal Computer and compatible users to automate several daily activities, including extensive letter writing and mass-mailing functions, and is also available in a bilingual English/French version.

Pinetree, 8100 Granville Ave., Richmond, B.C. V6Y 3T6. 604-270-3311.

Macintosh products

Quantum Leap Technologies, Inc. has announced a compact disk/read-only memory (CD-ROM) disk for the Apple Computer, Inc. Macintosh.

Called **Mega-Rom**, the product reportedly contains over 335M bytes of Macintosh public-domain and shareware files on a single, unerasable disk. The Apple CD SC or the NEC Corp. CD-ROM drive is necessary for operation.

Mega-Rom costs $49.

Quantum Leap, 314 Romano Ave., Coral Gables, Fla. 33134. 305-446-2477.

Seikosha America, Inc. has announced a dot matrix printer for the Apple Computer, Inc. marketplace.

The **SP-1000AP** offers Apple II series and Macintosh compatibility with Imagewriter I emulation, according to the vendor. The 9-pin unit reportedly prints 75 char./sec. in draft mode and 15 char./sec. in near letter-quality mode. It costs $349.

Seikosha, 1111 Macarthur Blvd., Mahwah, N.J. 07430. 201-529-4655.

Mainframe Muscle for your PC

SPF/PC™ 2.0

Now you can re-create the mainframe editing environment on your own IBM PC with SPF/PC, the only PC editor functionally equivalent to editing on the IBM mainframe with ISPF/PDF, Version 2, Release 2.

Files of virtually any size may be edited with SPF/PC because it uses all extended or expanded memory, or disk drive work space.

Mainframe users will especially appreciate SPF/PC's familiar commands, fast PC processing, and micro-to-mainframe file portability.

SPF/PC's main menu provides access to the EDIT and BROWSE facilities; utilities for file MOVE, COPY, RENAME, etc.; facilities to access other programs; on-line HELP and more.

Real work in progress on a COBOL file.

A few other SPF/PC enhancements:

- true split screen
- directory/member lists
- binary file editing
- picture strings
- hexadecimal editing
- 43-line EGA/50-line VGA support

SPF/PC runs under DOS on the IBM PC, XT, AT, PS/2 and all true compatibles; and in DOS emulation under OS/2. Native OS/2 support is in development.

Want proof? Ask us for a free interactive, demonstration diskette.

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NETWORKING

DATA STREAM

Elisabeth Horwitt

A single point of light

'Tis the season to be jolly, so let's talk about one of the few points of light in an otherwise murky network management landscape: Hewlett Packard's Openview.

Lest I be required to turn in my ACLU (Analysts' Cynical Liberties Union) card, let me say up front that Openview shares some of the same limitations as similar offerings from AT&T, DEC and Northern Telecom.

All of these vendors claim to offer an "open" Open Systems Interconnect (OSI)-based network management system, but what those systems still do best is manage the vendor's own products. The "open" part comes in the form of specifications for linking other vendors' products to the system.

Openview, for example, consists of a bevy of applications for managing HP networking and computing offerings; a graphics-based user interface based on Microsoft Windows; support of OSI protocols that can link Openview to other vendors' network management systems; and a kit for developing applications to manage other vendors' products, based on the Openview user interface.

That kit is what differentiates Openview from other network management "plat-

Continued on page 44

Netview cornering U.S. market

IBM seen as peerless leader in network management race, report says

BY PATRICIA KEEFE
CW STAFF

LOS ALTOS, Calif. — Users seeking to combine voice and data networks are expected to turn increasingly to IBM's host-based Netview system, according to a recent report that also predicts IBM will emerge as the clear leader in the U.S. network management market.

Netview's growing popularity derives partly from IBM's huge installed base of Systems Network Architecture users and partly from its "superior" data management capabilities, according to "The IBM Directions Report," available next month from International Technology Group (ITG). "If you are predominately IBM, Netview is the way to go," said Thomas Nolles, president of CIMI Corp., a Haddonfield, N.J., consulting firm.

Also, ITG cited a number of major enhancements on the way from IBM, including a comprehensive software distribution facility, dynamic voice/data network reconfiguration and new lines of specialized network management equipment. Further expansions of Netview will include support for international networks, Integrated Services Digital Network (ISDN) installations and facilities management.

Going IBM's way

A number of broader market trends are also working in IBM's favor, according to the report. One trend is users' increasing focus on the data side of networking as data traffic takes up an increasing proportion of companies' communication use. Data traffic made up about 26% of 1988 traffic volume in Fortune 500 network installations. This level is increasing and is expected to reach 57% by 1990.

Also in Netview's favor is the growing number of companies that have combined voice and data management under a single operation, which is then headed up by MIS in more than 70% of cases, according to ITG. As networks become more complex, users will increasingly turn to the data management capabilities of mainframes, ITG said.

The high costs of networking will also push users toward IBM, ITG predicted. In 1987, communications managers in Fortune 500 companies spent about 7% of their budgets on network management equipment. ITG predicts this will more than triple to 22% by 1991. IBM remains one of the few vendors capable of offering comprehensive and relatively low-cost network management support and services, the report said.

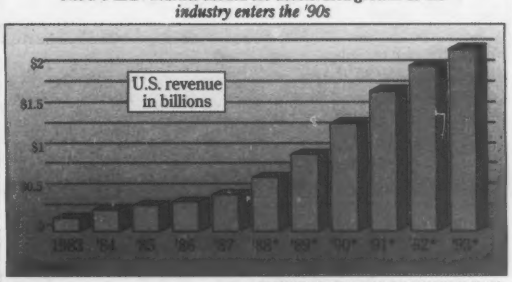
"IBM will deliberately price its offerings inexpensively to gain market share and build account relationships in this area,"

Continued on page 45

Data View

Cruising speed

The PC LAN market should see accelerated growth as the industry enters the '90s



SOURCE: MARKET INTELLIGENCE RESEARCH CO.

ISDN standards ratified

BY KEITH NEWMAN
IDG NEWS SERVICE

AUCKLAND, New Zealand — Product developers and manufacturers keen to be a part of the new telecommunications environment can take heart that official standards for Integrated Services Digital Network (ISDN) were recently ratified.

The CCITT plenary session in Melbourne, Australia, unanimously accepted the 2B+D proposal for two 64K bit/sec. B channels and one 16K bit/sec. D channel for signaling, which has been under discussion since the last plenary session four years

Continued on page 45

Sytek announcements span net spectrum

BY PATRICIA KEEFE
CW STAFF

MOUNTAIN VIEW, Calif. — Sytek, Inc. recently unleashed a flurry of product announcements covering the gamut from local-area network servers to wide-area networking.

The heart of this product blast, however, is clearly centered on wide-area networking (WAN) technology:

- The 8220 fiber-optic backbone bridge, which reportedly provides a protocol-transparent connection for Ethernet networks for less than $10,000. Compatibility with the Fiber Distributed Data Interface standard, once finalized, is planned.
- The 8011 WAN bridge, which is said to interconnect remote Ethernet networks via high-speed serial interfaces, including T1.

Continued on page 45

Inside

- A map to MAP. Page 44.
- PCs get fault-tolerant Ethernet capability. Page 46.
- Compex displays LAN controller card. Page 46.

Sungard adds downtime services

BY ROBERT MORAN
CW STAFF

NEW YORK — Sungard Recovery Services, Inc. last week unveiled several networking and satellite services designed to help customers cope with computer downtime caused by communications and processor failures.

In addition to the services, the company introduced Chairman and Chief Executive Officer Kenneth Adams, the former president of Sungard Trust Systems, Inc., the trust accounting unit of Sungard Data Systems, Inc. Adams replaces Richard Aldridge, who resigned for personal reasons, according to the company.

Sungard's Switched Satellite Service is a very small-aperture terminal (VSAT) communications alternative to Earth-based service for communicating with a Sungard hot site.

From above

Installations will require a permanently installed VSAT dish costing $3,400 per month, including the cost of the dish, modems, cabling and other equipment.

VSAT services will carry a rate of $300 to $750 per hour, depending on the selected bandwidth — from 56K to 1.5M bit/sec., Vice-President of Network Services Jim Domanico said. The nationwide service is slated to become available by year's end. A Southeastern bank is serving as the beta-test site.

According to Norm Harris, president of Harris Devlin Associates, a contingency planning service and Sungard subsidiary in Dublin, Ohio, "The satellite service will greatly improve communications capability and decrease the time necessary to restore network operations after a disaster."

The company is also building a T3 multiplexer communications backbone to service major East Coast cities.

The East Coast run

The first segment will run from New York to the Philadelphia hot site with nodes in Newark and Princeton, N.J. According to Domanico, the Sungard Network Access Point's 45 services, which divide and reroute T1s, will run dual-communications paths and will be able to switch carriers in an outage. Prices range from $100 to $2,000 per month, depending on the number of T1 lines used, and are slated to be available in the first quarter of 1989.

Another communications offering allows customers to contract for an inventory of cellular phones in the event of communications problems. While the services are limited to voice presently, they will accommodate data communications by spring 1989, Domanico claimed.

The company is also introducing disaster recovery services at its San Diego facility for Digital Equipment Corp. computers. The service offers a cluster of two VAXs and 128M bytes of storage. Monthly charges range from $1,500 to $5,000. Customers will also be required to pay a declaration fee of $25,000.

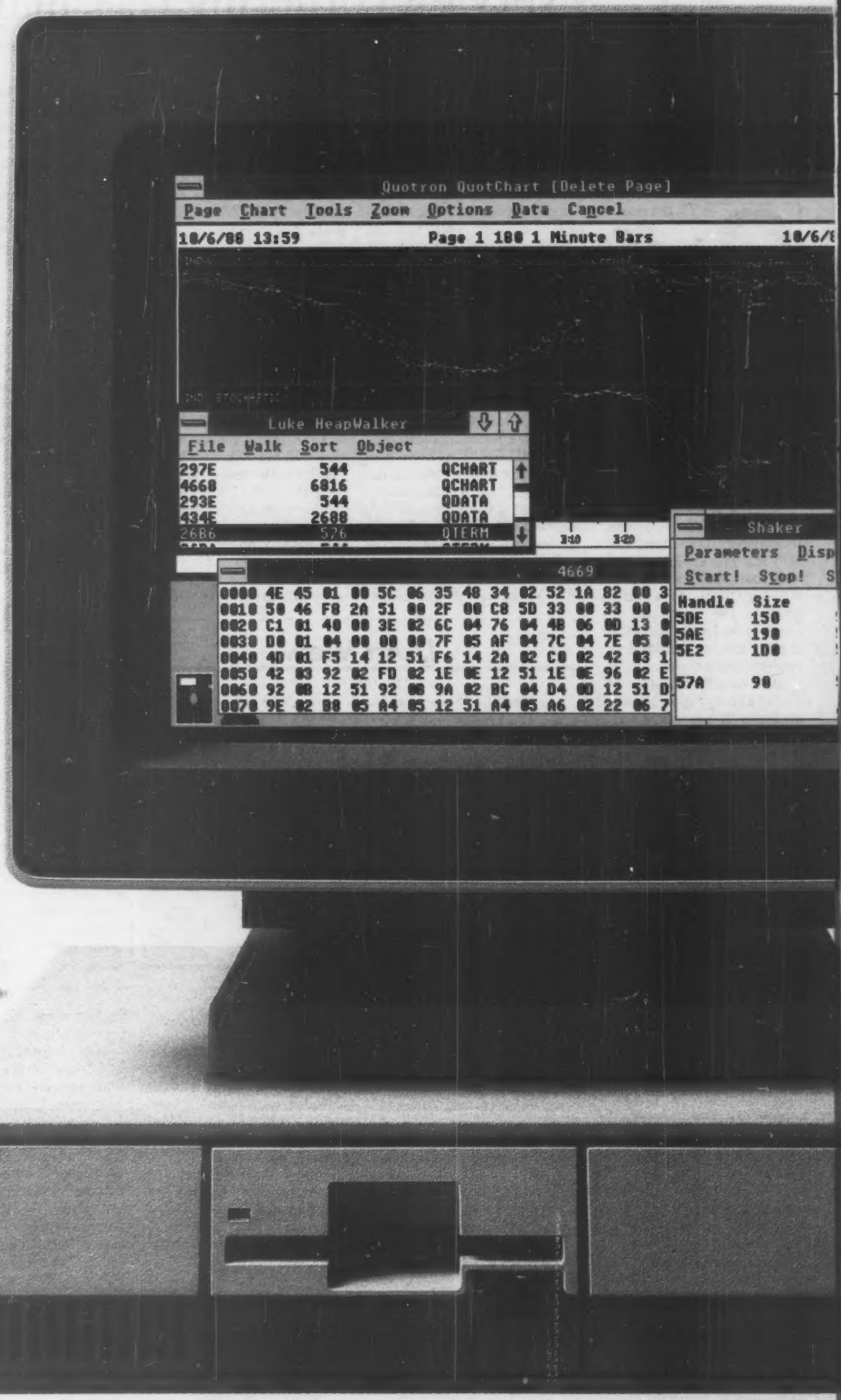
What do you mean yo

CodeView:
Now appearing in Windows.

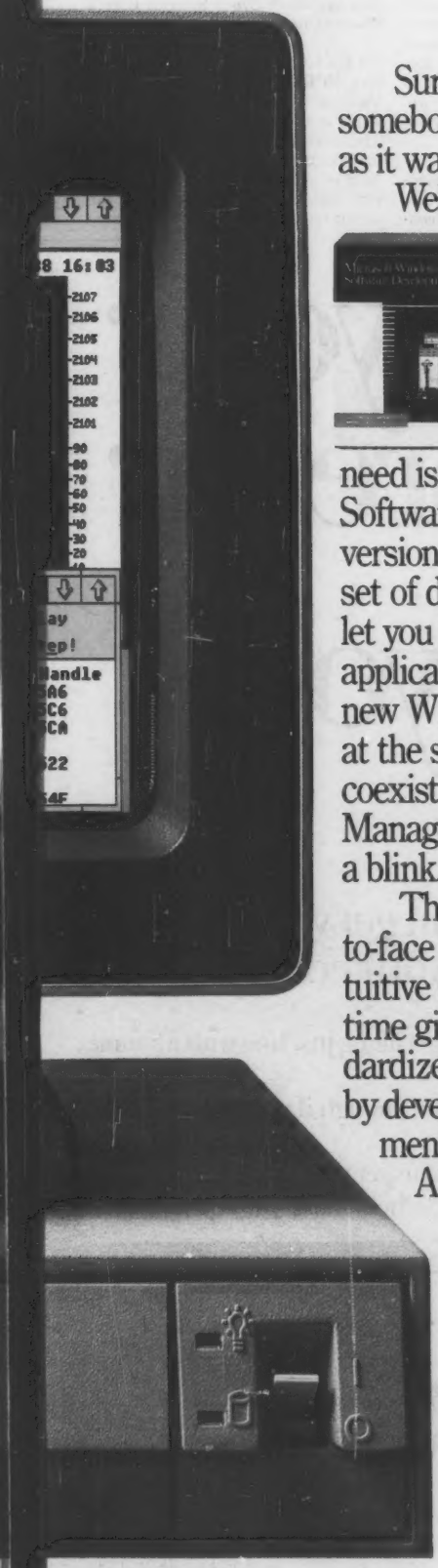
If you want help with your Windows, crack one open.

Whip up your own creations.

A helpful little navigator.



ou don't do Windows?



Sure, it's a tough job, but somebody had to do it. As long as it wasn't you.

Well, the news is good. Because developing applications for Windows just became extremely do-able.

What you need is the Microsoft® Windows Software Development Kit, version 2.1. The comprehensive set of development tools that will let you blaze through powerful applications for the important new Windows environment and, at the same time, set you up to coexist nicely with Presentation Manager. Without so much as a blink.

These tools will put you face-to-face with an easy-to-learn intuitive screen. And at the same time give you the means to standardize tasks across applications by developing your own pull-down menus, icons and dialog boxes. All designed to let you do more while toiling less.

And every program you create can be rewritten in Presentation Manager with little extra effort.

These sophisticated tools include Microsoft CodeView® for Windows, the new integrated debugger, Dialog Editor (lets you design your own dialog boxes), Icon Editor (helps you create unique icons, cursors and bitmaps), MAKE (program maintenance utility), and Font Editor. To make matters easier, there's a complete set of reference manuals.

And there's more help available with Microsoft OnLine, your own electronic phone support to clear up any technical questions.

If you really want to fill your head with everything you didn't know about Windows programming in all its glory, sign up for one of our crack courses at Microsoft University.

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BIT BLAST

A guide to working with MAP

The Society of Manufacturing Engineers (SME) has published *Understanding MAP — Your Key to Achieving the Integrated Factory.* The book is said to provide basic principles of Manufacturing Automation Protocol and information on how to implement the networking standard and use it in computer-integrated manufacturing. Order from SME, 313-271-1500, extension 418 or 419.

TDCC/The Electronic Data Interchange Association (EDIA) has appointed Alvan S. Bixler as director of technical operations. Bixler is in charge of reviewing TDCC/EDIA's current programs, including the group's software source code and EDI system testing service and hot line. In addition to developing new services, he will serve as a liaison to the many EDI standard groups.

MCI Communications Corp. and **Microtel Ltd.** recently became full members of the **Open Systems Interconnect/Network Management Forum.** The Forum also gained five new associate members: **Computrol, Contel Technology Center, Fujitsu America, Siemens AG** and **Tech-Nel Data Products Ltd.** Total Forum membership is 34, including 13 voting members and 21 associates. The group was formed earlier this year to speed up vendor agreement on and facilitation of an OSI network management standard.

APL Group, Inc. has agreed to market **IBM's Information Network** value-added service, which provides mailboxes for companies that want to exchange documents via EDI. APL has interfaced IBM's service with its own EDI software, QualEDI, and will market the two together as a complete pacakge.

Microsoft Corp. recently hosted a number of vendors demonstrating support for OS/2 connectivity. The following demonstrations supported the Ashton-Tate/Microsoft/Sybase SQL Server: Ashton-Tate Corp.'s Dbase, Borland International's Paradox, Dataease International, Inc.'s Dataease, Information Builders, Inc.'s OS/2 Focus, Popkin Software's System Architect and CASE Tool and a preliminary version of Synex Systems Corp.'s Blueprint driver.

Yet another licensee of **LAN Manager** is here. **NCR Corp.** rolled out its version of Microsoft Corp.'s network software, which runs on NCR's PC Token-Ring. The nameless software is compatible with the Microsoft Networks-based version of NCR's current network operating system, features OS/2 client and server support and is slated to ship March 1.

Horwitt

CONTINUED FROM PAGE 41

forms," in that it provides — right now, not next March — a usable foundation for vendors that are building a network management system for the first time.

Take Microtronix Systems Ltd., a small Canadian vendor of CCITT X.25 and DEC local-area network interfaces. Using the Openview Development Kit, Microtronix brought out a graphics-based network management product in 60 days, company spokesman William Gowans said. Without the kit, it would have taken until 1989 to develop a system even without graphics, he added. Now Microtronix has the product it needs to "compete against the big guys," Gowans said. "It's like we're David and someone handed us a slingshot."

Microtronix is also looking at IBM's Netview/PC, since "two of our products are designed for SNA," Gowans said, refering to IBM's Systems Network Architecture. "But it seemed cumbersome and restrictive," lacked Openview's friendly interface and "did not seem to give us enough control," Gowans said. And AT&T's Unified Network Management Architecture "had specifications, but no solution attached."

Fibercom, Inc. also feels that Openview is a good way to go, said company spokesman Jim Kinder. The LAN vendor and systems integrator plans to use it to manage various types of equipment that it ties together for customers, he added. "It cuts down your development a lot, provides a user interface with the nice look and feel customers are looking for. This allows us to concentrate on getting the boxes to communicate properly."

Wouldn't it be nice for users everywhere if network vendors could develop an OSI-compatible system with friendly graphics and windows in about 60 days?

Another attractive side of Openview is the fact that HP sells it. Vendors trust HP to make its system truly OSI-compatible; they also find HP unthreatening. Turning control of their networks over to a Godzilla like IBM does not appeal to all vendors — particularly companies like 3Com and Novell, which directly compete with IBM in the LAN arena.

3Com has indicated it will support Openview; Novell is rumored to be planning a similar move. Which, again, will be nice for users, since neither has a network management system worth a darn.

Horwitt is a *Computerworld* senior editor, networking.

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Sytek

CONTINUED FROM PAGE 41

• The 8125 Localnet/X.25 gateway, which forms an interface between a Sytek network and a public data network via CCITT's X.25.

Also introduced were two server-related products: Localnet Integrated Network Connectivity (LINC)/Term Multiple Protocol Software for Terminal Servers and LINC/Local Area Transport (LAT). Both products will ship in January, the vendor said.

The 8220 conforms to the IEEE 802.4 token-bus standard and supports Xerox Network Services, Digital Equipment Corp.'s Decnet, Transmission Control Protocol/Internet Protocol (TCP/IP), Novell, Inc.'s Netware IPX and the emerging Open Systems Interconnect. It reportedly spans up to 12 miles and can integrate a large campus of several dozen subnets. The 8220 lists at $9,995 and reportedly will be available in February.

The 8011 is a remote, protocol-transparent media access control layer bridge that will support up to 2.084M bit/sec. in point-to-point applications. Other features include packet filtering based on selected protocols or source or destination address, load-sharing capability, diagnostics and password-protected network management. It lists for $7,500 and is slated to ship in February.

The 8125 gateway is said to provide automatic session setup and routing, network management and on-board diagnostics. It can handle up to 32 sessions concurrently. Expected to be available in January, it costs $12,000.

LINC/Term is a network operating software package said to provide the operational and administrative functions of the Localnet Terminal Server product family. The downloadable software supports both Decnet's LAT protocol and TCP/IP. The servers can run both protocols.

Network devices are linked via TCP/IP's Telnet or LAT, while a broad range of security features and session control and server management functions are provided, the vendor said. LINC/Term is priced on a site-license basis with a sliding price scale.

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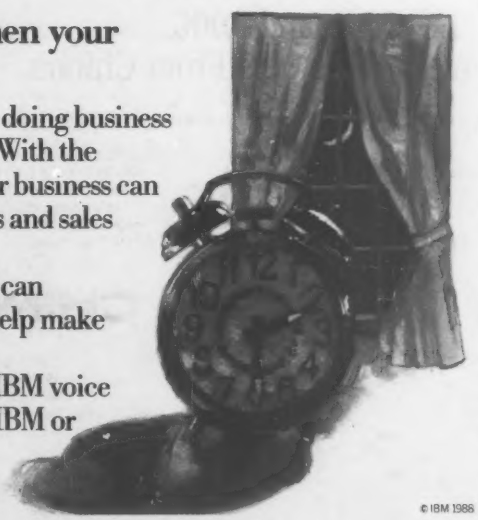

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ISDN

CONTINUED FROM PAGE 41

ago. "They will now address the proposed broadband standards, which will enable slow-frame moving pictures to be transmitted," said New Zealand's CCITT delegation head, Jack Skurr. The result of the various discussion groups will go forward to the 1992 plenary session in Geneva for ratification, he said.

"The telecom community has accepted, for some time, that the concept of ISDN is fairly well in place and accepted it as the direction in which everyone is going. The only things at issue are when telecom providers want to go ahead and do it and how many customers want the service," he said.

"ISDN is no longer looked upon as an innovation subscribers don't need," Skurr said. "Everyone believes it has a firm place in the future development of telecommunications systems."

ISDN, a networked service combining data, voice and images on the same lines, is scheduled to undergo trials in New Zealand in January 1990 and be available commercially the following year.

Skurr, a consultant employed by the New Zealand Department of Trade and Industry, said about 400 delegates from around the world attended the CCITT conference to consider a series of papers that stood one meter high. "There was no way we could get down to details, but we did look at ways of speeding up the whole process and minimizing the cost while still meeting the needs of member countries," he said.

A resolution was passed during the assembly to ensure that recommendations finalized out of study groups could be passed before the quadrennial plenary sessions. A constitutional change to allow the speed-up will go through to the plenipotentiary meeting in Nice, France, in June. An agreement was also reached to increase the use of polling groups to bring back consensus views to the meetings.

About six members from the New Zealand delegation attended the CCITT conference at any one time. A follow-up meeting late last week attended by many of the same CCITT delegates considered a controversial 11-page paper that flies in the face of telecommunications deregulation [CW, Dec. 5].

Netview

CONTINUED FROM PAGE 41

the report said.

Another Netview strength is broad industry support: More than 30 vendors now support the Netview/PC interface to the host-based system. This may cause some users to go with IBM's proprietary system rather than wait for the Open Systems Interconnect standard, Nolle indicated. He cautioned, however, that most vendors' Netview support is limited to sending network alerts up to the host-based system. "It's one-way support; you can't send any information back," he said.

Despite this limitation, Netview is still in a strong position, just because IBM is IBM, ITG said: "Investments in IBM systems and software, and the more than 35,000 SNA networks already installed worldwide, provide IBM with a great deal of leverage in addressing the requirements of corporate network users."

NEW PRODUCTS

Local-area networking hardware

A fault-tolerant Ethernet communications capability for personal computers has been announced by **Alantec.**

The **Fault-Tolerant Ethernet LAN** (FTEL) consists of a dual-port Ethernet adapter card running fault-tolerant driver software. Mounted in an IBM Personal Computer AT compatible, the product reportedly provides redundant Ethernet connectivity for PCs in the event of a transceiver or cable fault.

The FTEL 1.0 package includes a dual-cable Ethernet arbitrator that supports up to 30 users, software drivers for Novell, Inc.'s Netware and fault-tolerant protocols. It is priced at $10,080.

Alantec, 101 Hammond Ave., Fremont, Calif. 94539. 415-770-1050.

A local-area network controller card that utilizes bus topology and supports up to 32 nodes has been announced by **Compex, Inc.**

The **A-Net 42** is reported to be an Arcnet controller with four active ports and allows workstations to be connected to coaxial cables via T connectors. The system is priced at $499.

Compex, Unit H, 4075 El LaPalma, Anaheim, Calif. 92807.

A prepackaged local-area network designed to accommodate the needs of the medium-size to very large tax departments of accounting firms has been announced by **CLR/Fast-Tax.**

Dubbed the **Network Control Center**, the product is available in two configurations and incorporates network equipment, cabling and both network and tax application software in a single cabinet, the vendor said.

Both versions contain IBM Personal System/2 Model 80 file servers with up to 600M bytes of fixed storage. The company's tax software is pre-installed on each model.

The Network Control Center is priced from $47,500 to $69,500, depending on configuration. Both prices include all software, equipment, implementation and training.

CLR/Fast-Tax, 2395 Midway Road, Carrollton, Texas 75006. 800-327-8829.

Local-area networking software

IBM Netbios-compatible software that provides application-level compatibility with Novell, Inc.'s Netware has been unveiled by **Performance Technology Corp.**

Powerlan 1.2 permits elective sharing of workstation-connected resources, such as drivers, printers and plotters, and runs applications under DOS, OS/2 and Xenix operating systems. Registered users of Powerlan 1.1 will receive the upgrade version free.

Performance Technology, 800 Lincoln Center, San Antonio, Texas 78230. 512-349-2000.

Brightwork Development Corp. has announced a desktop publishing printing product that allows users to upgrade their Hewlett-Packard Co. Laserjet printers to Adobe Systems, Inc. Postscript compatibility.

PS Publish is totally integrated with Novell, Inc.'s Netware 2.1 and allows all users on a local-area network to access the printer without dedicating a personal computer. It is priced at $2,790.

Brightwork, P.O. Box 8728, Red Bank, N.J. 07701. 800-552-9876.

Links

Proteon, Inc. has unveiled a router designed to interconnect Novell, Inc.'s Netware and Transmission Control Protocol/Internet Protocol networks. It is especially suited for small work groups, isolated departments and remote office environments.

The **P4100 Router** reportedly allows users to develop medium-speed backbone networks, connect to wide-area networks and integrate Ethernet and Token-Ring local-area networks.

P4100 costs $3,750 for the base unit.

Proteon, 2 Technology Drive, Westboro, Mass. 01581. 617-898-2800.

Cabling

Mux Lab has announced a powered two-port star-wiring panel designed to increase cabling flexibility in IBM System/34, 36 and 38 environments.

Double Twinstar allows peripherals to be connected in a star configuration with virtually no distance constraints and provides line isolation between each device port.

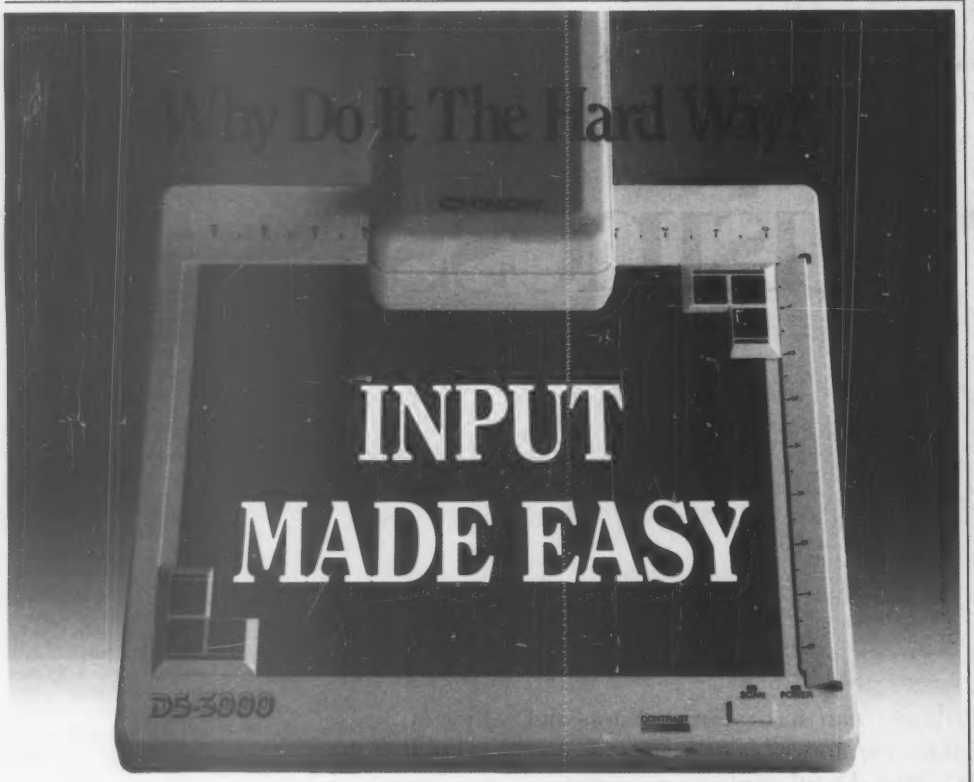
According to the vendor, the product works in conjunction with the company's Miniplex twinax balun and costs $817 per unit.

A product designed for Wang Laboratories, Inc. VS users has also been unveiled from Mux Lab.

The **Dual-Coax Octopus** reportedly connects a group of eight Wang peripherals over unshielded twisted-pair wire, thus allowing the complete elimination of dual-coaxial cable, the vendor said.

The Dual-Coax Octopus costs $480.

Mux Lab, 165 Graveline, St. Laurent, Quebec, Canada. H4T 1R3. 514-735-2741.



DS-2000 and 3000:
The Affordable Scanners From Chinon.

Chinon's affordable new scanners could change forever the way computers are used. With OCR software you can input text without retyping it. With a simple add-in card, DS-2000/3000 turns your computer into an full-featured fax. And with the ability to scan almost any type of graphic image, DS-2000 and 3000 are perfect for desktop publishing.

Our scanner models offer different levels of scanning resolution so that you can have the scanner that's right for your applications-and your budget. The affordable DS-2000 is perfect for use as a fax or for scanning line art-applications where its 200 dpi resolution is quite adequate, and where speed may be more important. DS-3000, with its 300 dpi resolution, is better suited to OCR applications, or for scanning images for desktop publishing that require grey scale and higher resolution.

DS-2000 and 3000 are sold bundled with exciting software so that it's easy for you to get started. Discover how your computer can be more useful than ever before—discover DS-2000/3000. Call TOLL-FREE for the dealer nearest you.

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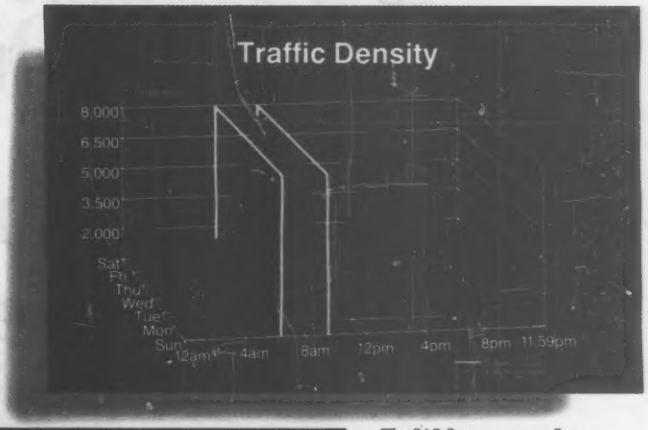

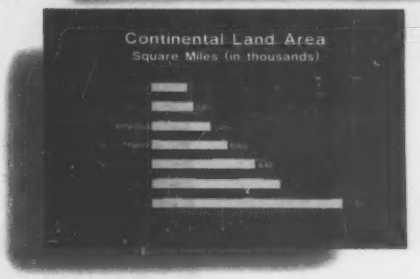

The SAS System runs on Sun Microsystems, Inc.'s Sun workstations under SunOS®; Hewlett-Packard's HP 9000 workstations under HP-UX; and on mainframes, minicomputers, and personal computers.

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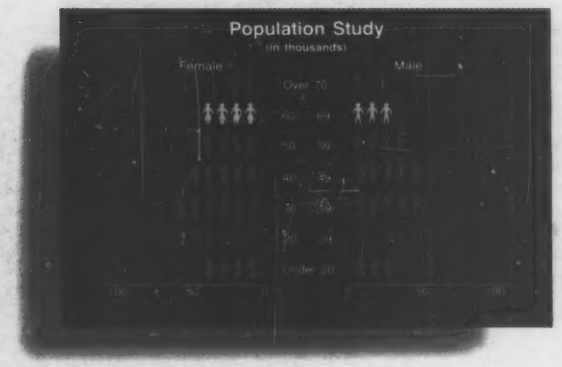

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IBM AND COMPATIBLE PC PRODUCTS

Users want some peace and harmony

BY JOHN J. XENAKIS

STUART GOLDENBERG

Kathy Fleck has just about reached the end of her patience. Fleck, manager of end-user computing at TRW, Inc. in Cleveland, is fed up with listening to vendors fight.

"I think the whole thing is outrageous, with different people in the industry going in different directions," she says of the split between IBM — whose Personal System/2s implement the Micro Channel Architecture (MCA) — and Compaq Computer Corp. and others that promote the Extended Industry Standard Architecture (EISA). "The group doing EISA may have done the right thing [in terms of a bus standard], but if the industry doesn't stop changing so much, we won't be able to standardize for the rest of our lives."

Chester Hopkins, information processing manager at the Buick Division of General Motors Corp. in Flint, Mich., just wants a little peace and harmony. "We really need to maintain compatibility," he says. "I hope the industry doesn't decide to go in two separate directions."

Fleck and Hopkins are just two voices, but their statements are reflective of a growing strain of resistence in the community of corporate personal computer users.

"MIS directors are really tired and bored by the little vapor clubs," says Nancy Kirk, director of industry research at The Sierra Group, Inc. in Tempe, Ariz. They are tired, she says, of being told about new approaches that they never asked for and do not need and of hearing about alternatives that do not exist yet.

For a long time, corporate users were willing to let vendors set the pace of change and willing to debate compatibility differences between computers. In fact, they seemed to relish the challenge of comparing machines. They appointed committees to study and evaluate different systems, and they created departments to diversify machine populations.

But now users are starting to rebel. If a technology is working, they do not want to be pressured into giving it up. And when they are ready to make a change, they would prefer not to have to choose between diametrically opposed alternatives. Evaluations are time consuming, and tightened budgets leave less latitude for exploring paths that might turn into dead ends.

Power struggle

Most of the annoyance that is boiling up these days has to do with the bus debate, but some users are also digging in their heels over generational issues. Although pressure is strong to convert from Intel Corp.'s 80286 to 80386 microprocessors, some users are just flat out refusing to buy the argument that they need that much power.

Steve Derry, manager of Corporate Information Systems at Borg-Warner Corp. in Chicago, is not swayed by the advice to purchase 386-based machines and stay away from Intel 8086 or 286 machines.

"The whole issue of 286 and 386 relates only to compute-intensive work," he says. "I have those battles among the people on my own staff, where I have programmers who complain that it takes too long to do a compile. It's always possible to use up horsepower, as we've seen on mainframes, and I think the same thing applies to PCs."

Derry says he wants to get his company off its IBM 4341 mainframe and convert to a PC-based local-area network. IBM's PS/2 figures into those plans to some degree, he says, but only at the lower end of the line.

"We have half a dozen [non-MCA] PS/2 Model 30s but nothing at the high end," Derry says. "We haven't seen any benefit for us from the Micro Channel. For the money we could spend on an expensive PS/2 or even on a

Xenakis is a computer columnist for the *Boston Globe* and software editor of Boston Computer Society's *BCS Update Magazine*.

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Harmony

FROM PAGE 49

Compaq, we could get an [AST Research, Inc.] machine for $3,000 or $4,000," he says.

Bob Palakov serves as manager of end-user computing at Ryder System, Inc. headquartered in Miami. For Palakov, who is in charge of computer acquisitions, the issue is a matter of money. He says he does not feel it is important now to pay the additional cost of 386 machines.

TRW's Fleck

"Going to the 386 is another big price jump where the price/performance benefits are not that clear cut," he says. "We have not gotten very far toward the 386 machines — we have some, but the standard workstation is a 286-based machine."

Although Ryder shifted to purchasing PS/2s right after the line was introduced, the new equipment is mostly [286-based] Model 60s.

"We still use a lot of old ATs, and we even still find new uses for old PCs as workstations," Palakov says.

Palakov claims he is not too excited about the MCA bus, but he is not anxious to put his support behind the EISA bus, either. "It's a splintering of an already small market and there's nothing out there to take advantage of the expanded architecture of either the MCA or the EISA," he says. "A lot of us still see a lot of value in the old AT standard."

That is why Palakov is keeping his eye on the non-MCA PS/2 Model 30/286. "It's priced so low and since it doesn't have the Micro Channel, it appears that IBM is using it to rejustify the old AT bus," he says.

In terms of performance, Palakov says the Model 30/286 is comparable to the PS/2 Models 50 and 60, which are also 10-MHz machines.

"Its main disadvantage is that it still has that three-slot limitation, but in the right places, the Model 30 can be a very attractive machine, and it's an alternative that we can live with, from the point of view of a shop that wants to stay Blue. We leave the door open to clones but are not very anxious to go that route."

Terry Marksberry, director of management systems at Pillsbury Co. in Minneapolis, was not too anxious either, he says, but when IBM "took a left turn" with MCA, standardizing on Compaq seemed like the most sensible choice.

"It gave us the future we needed, and it protected the large investment we had in AT-type equipment. We're trying to keep things simple by avoiding the Micro Channel," Marksberry explains, "trying to keep as many things constant as we can, not only architecturally, but also in terms of support. If you try to mix too many technologies, starting with the bus technologies, you get into trouble."

A godsend

While a considerable number of corporate managers made similar decisions, many were concerned, either overtly or secretly, that they were making a mistake by purchasing old technology as opposed to the newer MCA technology. For those people, the EISA announcement was a godsend.

"We were very pleased to see the EISA come out," Marksberry says. "It's important to us to the extent that if it does what they claim, then it validates our decision to continue on course, and it extends the architecture and the current investment that we have."

Borg-Warner's Derry is somewhat more reserved in his endorsement. "I have a position on EISA only insofar as it remains compatible with the industry standard, which I think is a good idea. A lot of companies have paid a small fortune for PCs and PC XTs, and they don't want to write that off just because the latest thing is completely different."

It is, however, the same worry that current equipment may be made obsolete that causes TRW's Fleck to be so frustrated by the ongoing bus wars.

Even though there have not been any real problems with the MCA PS/2s that TRW has purchased, there is not enough certainty about the direction of the industry to allow the company to feel secure in its choice.

"We're very concerned that the PS/2 machines [with the MCA] that we've bought may become obsolete," Fleck explains. "Those are expensive machines, so that's a big issue to us."

Better shop around

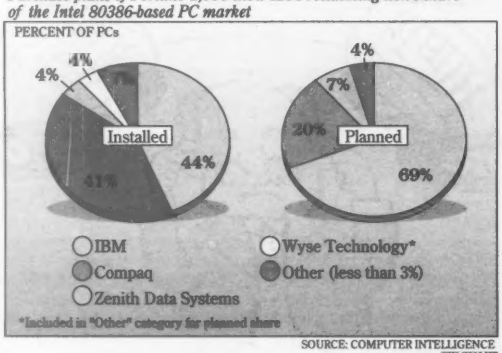
Although Fleck says the confusion has not affected her purchasing decisions yet, she does say that TRW, which has always been an IBM shop, is beginning to look at other alternatives. "We're going to be looking at Compaqs and other 386 machines as well."

IBM draws much of the fire from users for touching off the whole bus compatibility issue in the first place.

For example, Ivan Brass, vice-president and director of information systems at Manufacturer's Hanover Trust in New York, says that, while the MCA vs. EISA debate does not affect him personally as a user of Compaq, Toshiba America, Inc. and

Regaining lost ground

Purchase plans of Fortune 1,000 show IBM reclaiming lion's share of the Intel 80386-based PC market



SOURCE: COMPUTER INTELLIGENCE
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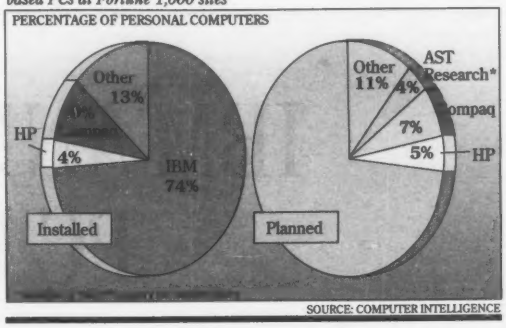
All quiet on the 286 front

Only minor changes are expected in the vendor lineup for Intel 80286-based PCs at Fortune 1,000 sites



SOURCE: COMPUTER INTELLIGENCE

Delicate detente for MIS, PCs

BY DAVID GABEL

The days of anarchy in microcomputer acquisition are on the wane, although some organizations are still struggling to create order from the chaos of brands and models that emerged when individual preference reigned supreme. Indications are that MIS is asserting itself and taking control of the acquisition and use of small computers in corporate America.

A recent study by the Toronto office of Peat, Marwick, Main & Co. found that 86% of Fortune 100-type firms and large government agencies surveyed now exercise some sort of control over the information technology department of the company.

In a few cases, information systems governance of personal computer selection extends to actual purchasing. The Spicer Transmission Division of Dana Corp. in Knoxville, Tenn., is one such case.

"I recommend and buy all equipment," says John Zanetti, network administrator for the division. Zanetti sets up corporate accounts with local dealers and, using these accounts, gets significant discounts for computer equipment.

"The advantages to buying the way I do," Zanetti says, "are price, reliability and compatibility." The Knoxville division has several PC networks in place and must communicate with mainframes at corporate headquarters in Toledo, Ohio. "I'm in charge of maintenance, so keeping everything standard is very important for me. I have to make sure that things stay up," he adds.

Central funding is more the exception than the rule, however. According to Peat Marwick, MIS organizations use a number of tactics to restore order, but in its sample, less than 25% of MIS departments actually governed the purse strings.

More commonly, control is exerted in less overt ways — through the establishment of approved lists of computers for which funding is authorized or through partial or complete withholding of support for non-approved computers.

Terry L. Eikenbery, executive officer of data processing at Sovran Financial Corp. in Hyattsville, Md., has developed standards and convinces his users to comply with these in-house regulations. For example, when desktop publishing first became popular, he says, his staff examined the hardware and software available and developed a corporate standard with which his users willingly complied.

Both MIS and end users are learning to compromise, notes Ron Evans, director of end-user computing at Nolan Norton & Co., a market research and consulting firm in Lexington, Mass. "Users know there's enough of a hornet's nest out there that they have to accept some direction. And sometimes MIS will go with something not technically superior because the users need it. Both sides have compromised," he says.

However, not all the battles for centralization have been totally painless, and some IS managers have been unable to achieve the level of standardization that they would like.

Holding pattern

Take, for example, the case of Ron Rice, manager of data processing at Pertec Peripherals Corp. in Chatsworth, Calif. Because the company has several different kinds of equipment on five-year, long-term leases, Rice cannot just get rid of it all and start over again, at least not until the leases expire.

"It's a real headache," he complains. "I can find three versions of Lotus' Symphony running on 10 different PCs." But what is worse is that for every would-be PC-purchasing rule, there appears to be an exception. "If the vice-president of engineering says that he can't run his department with some standardized piece of software, he gets what he wants," Rice says.

Like Rice, other managers have had their tough times. John Dunkle, vice-president of work group computing at Aberdeen Group, a Boston-based market research firm, says that the MIS executive these days is caught between pressure from top management to get involved and pressure from the user community to let them continue to run their own shows.

"MIS got volunteered," Dunkle says. "Top management said that if the company information is dispersed without control, then we have chaos. MIS, you will control the situation."

MIS organizations are moving in to restore order in the PC territory, but it may still be some time before peace can be declared. •

Gabel is a free-lance writer based in Northport, N.Y.

Zenith Data Systems equipment, IBM's decision to move to the Micro Channel is indicative of a general disregard of user interests. "IBM never considers the user when making their changes, and that's what happened with the MCA. They don't consider people who've made significant investments in current technology. They change their standards too easily," Brass claims.

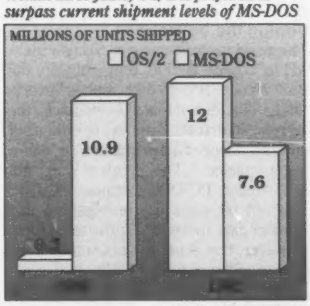
Compaq also culpable

However, Linda White, an analyst at Future Computing, a market research firm in Richardson, Texas, says that IBM is taking more than its fair share of the blame for the current schism. According to White, at least part of the current fuss can be connected to what might be a potentially deceptive marketing ploy by Compaq.

"Compaq has been waging a very verbal battle against IBM," she says. "Compaq has been saying in their ads that they've been selling more computers than IBM, but they've been taking those results from Storeboard, which only reports

Changing places

Within three years, OS/2 is projected to surpass current shipment levels of MS-DOS



SOURCE: DATAQUEST, INC.
CW CHART

on computer stores. There are a lot more channels besides computer stores — direct sales forces, VARs and so forth. The truth is that Compaq has a 4% market share vs. 16% for IBM. And even in Storeboard's results, sometimes Compaq does better, but sometimes not.

"So Compaq has veered from the path of IBM compatibility. And they came up with the terminology 'industry-standard technology' — not 'IBM-compatible.' They've promulgated the EISA bus. The other vendors have had a little input into the design, but not much," White adds.

Dual doubts

Although White says she believes that EISA will succeed in creating a dual-standard IBM world, she expresses some skepticism about when the standard will actually be finalized.

"We don't think it will be out for a long time," she says, noting that her organization's attempts to obtain the specifications for independent testing have so far been unsuccessful. "That makes us uncomfortable, since we're an independent testing firm," she says. "When someone won't give you specs, it makes you kind of skeptical."

Robert Holmes, a computer technology researcher at the Southern California Gas Co. in Los Angeles, also has his doubts about EISA, although he concedes that the consortium behind that bus standard has outgunned IBM in terms of marketing.

"IBM always shoots itself in the foot when it comes to marketing," Holmes says. "There hasn't been any real attempt to convince people who don't understand the technical merits of the MCA that it's worthwhile. People don't want to have to deal with different boards now, and they don't look ahead. But IBM hasn't tried to prove to people that that way of thinking isn't very good."

Southern Calif. Gas' Holmes

Holmes, whose company has invested heavily in PS/2 computers with the MCA, says IBM has done an excellent engineering job with the MCA's design.

On the other hand, Holmes is not sure about the technical merits of EISA. "The way that I would characterize it," he says, "is that you're now building a machine with two buses — it has a high-speed 32-bit bus, but it also has the 8/16-bit bus at 8 MHz. Building a dual-bus machine with buses running at two different speeds is more complex, and we won't know how expensive those machines will be until they're out."

Despite the unresolved questions about a dual-bus system, Holmes adds, the group behind EISA has outdone IBM in selling its approach to the medium- and low-tech people. "And that," he says, "is ludicrous."

Right now, many organizations can sidestep the decision entirely because, as Ryder's Palakov points out, the applications that would make expanded bus architecture a must have not yet arrived.

"People tell me if they're going to buy a bunch of PCs to solve problems that they have right now, then MCA or EISA doesn't make any difference since there's nothing out there yet that proves to anyone the advantages of either architecture," says John Murphy, an industry analyst at Wohl Associates in Bala Cynwyd, Pa.

The conclusion Murphy draws from that fact, however, is not one that is likely to comfort users who are hoping for a speedy resolution of the bus dilemma. The current quandry is likely to persist, he says, for at least three years. •

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Board makers hop the MCA bus

BY STEPHEN SATCHELL AND BARBARA CLIFFORD

Twenty months have passed since the fateful day in April 1987 when IBM sprang the Micro Channel Architecture (MCA) on the microcomputer world. Since then, although the world has not exactly beaten a path to the MCA bus, makers of add-in boards have been busy designing and building products for the Personal System/2 — Models 50, 60, 70 and 80 — that support it.

Not every IBM Personal Computer AT-compatible product can move over to MCA. Disk controllers, for example, are an anachronism on the PS/2 machines, all of which have hard disk controllers on the system board. But most board makers are undertaking the transition, even if it means reformulating their product.

For example, instead of making separate video boards, which would not make a lot of sense considering that all four of the MCA PS/2s contain Video Graphics Array (VGA) adapters, vendors will build enhancers that expand the VGA's capabilities. IBM's 8514 adapter, which supports a larger screen, is the first of this new breed, and it will not be the last.

Right now, the board category with the longest lead and highest appeal is add-in memory. These boards appeared, it seemed, within minutes of the introduction of the first PS/2 systems. Today, they are at the top of the add-in wish list thanks, in large part, to OS/2's gluttonous appetite for random-access memory.

IBM's own memory expansion add-in board held 2M bytes of RAM but, because of third-party development, boards currently exist that stuff 4M, 8M or more bytes onto a single MCA board. IBM itself is rumored to have an 8M-byte board in the works.

Because the vast majority of active users are sticking with Microsoft Corp.'s MS-DOS and IBM's PC-DOS, at least for the moment, PS/2 memory boards that can support Expanded Memory Specification functions are much more in demand than plain-vanilla RAM boards.

Connectivity has not been neglected. Network adapters are becoming popular for PS/2 systems, as are local-area network adapters.

Micro-to-mainframe communications products are also popular; boards that emulate the IBM 3270 are the hands-down favorites.

Modem makers are starting to put their products onto MCA boards. The pace in this category has been slow but should pick up as vendors realize that businessmen really appreciate internal modems.

Makers of multiple-serial-port boards have also taken their time getting products into the starting gate, but that may simply be because the people who are interested in those boards are a minority.

Unplug the bottleneck

The problem with most of today's MCA add-in boards is that they rely on the PS/2's main CPU to do just about everything. This dependency slows down the system, so that the user has to either put up with reduced performance or buy a faster machine. The problem does not arise under PC-DOS because PC-DOS does not let users do computations and transfer data to devices at the same time. However, that is not the case under Unix and especially not under OS/2.

Computer scientists are looking toward the MCA for the fulfillment of the exciting promise of so-called "multiple bus masters." The notion is that these boards will handle the system's boring chores, such as shipping data into memory. The result is that instead of being involved in every piece of the action on the system, the CPU can spend more uninterrupted time on more interesting things.

IBM showed some of these intelligent boards at Comdex last month. Each of two MCA boards, equipped with 80186 processors, handled eight small computer systems interface mass-storage devices at data transfer rates approaching 16M byte/sec. Add an intelligent LAN adapter to this arrangement, and you have the makings of a slick network file server.

The most exciting prospect, though, is multicomputing — the very close linkage of two or more computers — for which the MCA is ideal. If systems designers took full advantage of these aspects of the architecture, it would not be long before the phrase "expanding your computational resources" meant not having to trade in your existing hardware but rather simply plugging in another computing engine. Sadly, the MCA alone is not enough to bring about this breakthrough. It will have to wait until operating systems exist that can handle multiple processors without coming unstuck. OS/3, perhaps?

As the number of MCA systems on the market grows, we look for the appearance of application-specific or frankly oddball add-in boards that take advantage of the capabilities of the MCA bus. Unfortunately, before that can happen, IBM will have to find a solvent that will melt buyers' resistance to the Micro Channel PS/2. •

Satchell helped found *Infoworld's* Test Center and has been writing product evaluations for 15 years. Clifford is an author of several computer books.

"...Computerworld Response Cards reach our market. I know this because we got 260 cards back right away."

Carlos Cadalzo is president of Integrated Systems Technology, Inc., a 10-year old CICS consulting company that recently began marketing PC-based development tools for on-line systems.

The company created the Quick Screen 3270, a development tool that helps analysts design screens for CICS and IMS/DC systems — without requiring a programming background. The next step was to determine the best way to reach the buying market for this new tool. And for Carlos, the first option that came to mind was *Computerworld.*

— Carlos Cadalzo
President
Integrated Systems Technology, Inc.

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MCA PS/2s add challenge to task of LAN installation

BY ANNETTE NEKORANIK

Local-area network installation is often more difficult than users anticipate, but this is particularly likely to be the case when IBM Micro Channel Architecture (MCA)-based Personal System/2s are involved. Networking PS/2s can be particularly challenging because of the MCA's incompatibility with the standard AT bus and the persistent memory problems associated with all LAN programs.

There are currently fewer LAN adapters available for the MCA-based high-end PS/2s than there are for the AT bus, although the numbers are steadily increasing. About half of the LAN board manufacturers now offer Micro Channel versions of their products.

Users who rely on smart cards to reduce the amount of memory required for LAN membership will have the most difficulty networking their PS/2s, because MCA-compatible boards of this type are generally harder to find.

USERS WITH Intel Corp. 80386-based PS/2s often equip their computers with more memory — as much as 4M bytes — but little of this additional memory is available to the LAN program.

MCA boards are considerably smaller than AT boards, and some makers of smart adapters — cards that run the LAN program on the card, instead of the personal computer — have been unable to offer MCA versions of their products at a reasonable cost.

In one respect, installing adapters designed for the MCA should be easier than installing boards designed for the AT bus. MCA adapters have a unique adapter ID that corresponds to a configuration file stored on the PS/2 configuration disk. This file can be used to set the adapter's options, a programming capability that simplifies adapter installation.

Despite this convenience, some PS/2 users still find MCA LAN boards more difficult to install because they are smaller than AT boards and because the slide mechanism is more complicated.

In general, adapter installation is less of a problem with the PS/2 Model 50 and Model 70 desktop systems than for the floor-standing Model 60 and 80 systems. However, with any model, it is relatively easy to bend some of the guide assemblies, so special care should be taken in handling and manipulating the boards.

Insufficient memory is probably the largest problem facing PS/2 LAN users. Users with Intel Corp. 80386-based PS/2s often equip their computers with more memory — as much as 4M bytes — but little of this additional memory is available to the LAN program.

In a standard DOS 3.3 environment, about 599K bytes of random-access memory is available on the PS/2 for application programs. PS/2 LAN adapters generally do not support IBM's Netbios or LAN primitive functions directly, so a device driver must be loaded into memory when the system is booted. Special PS/2 devices, such as the optional 8514 high-resolution display, also require drivers; after these drivers are loaded, the total memory available on a typical high-end PS/2 falls to about 498K bytes.

The situation worsens when LAN software is installed. A messenger configuration for IBM's LAN Program Version 1.2 leaves about 341K bytes available to applications programs — not enough to run most desktop publishing or graphics systems. If the same system is configured as a server, less than 250K bytes of RAM is available, and few programs other than IBM's DOS utilities will run on it.

Although memory problems are common with networked AT-standard PCs, buyers of high-end PS/2s are more likely to want to network their systems and run the latest application software. Most of that software will not run on a PS/2 configured as a server on a LAN, and much of it will not run on a LAN at all.

The MCA's potential will not be realized unless IBM's multitasking OS/2 becomes more popular, which should fuel advances in PC hardware. PS/2 LAN users already see conflicts between application programs and system resources, and those conflicts would only intensify if a more sophisticated, real-time adapter were attached to a DOS system.

Eventually, as the OS/2 LAN Manager provides increased memory to LAN workstations and third-party vendors offer more support, networking PS/2s should become less of a challenge. •

Nekoranik is senior editor of Faulkner Technical Reports in Pennsauken, N.J.

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ASK THE VENDOR

The following questions were solicited from users and conveyed to the vendors for responses.

I am currently using Ideassociates' Supermax board. The product comes with 8M bytes of memory and two serial ports but it does not have any parallel ports. Does Ideassociates have an 8M-byte board with both serial and parallel ports? If not, are there any future plans for such a board?

Gary Cobb
Chief Technical Analyst
Liberty Mutual Insurance Co.
Portsmouth, N.H.

IDEASSOCIATES, INC.: Our current line of Micro Channel Architecture boards offer two serial ports instead of a parallel port. However, all of our boards for the personal computer bus have parallel as well as serial ports.

Arnet has just announced a modular 8-port AT board and a 16-port Personal System/2 board. Does the company have any additional plans to release a 16-port board for IBM PC AT-class machines?

Fred Strauss
President
Multisystems Integrators, Inc.
Binghamton, N.Y.

ARNET CORP.: We are currently developing a 16-port intelligent serial port board for AT-class machines, to be released in May 1989. The board will employ a 10-MHz 80186 processor to offload I/O processing tasks from the host CPU. The same 16-port external connector housing developed for our IBM Micro Channel boards will be supplied with the new AT boards, providing 16 DB-25 connectors. Pricing for the product has not been set.

What is the nature of the compatibility problems between the Hauppauge Motherboard 386 and high-performance 16-bit hard drive controllers such as Perstors PS-180-16F? How can the two products be made to work together to take advantage of the AT-compatible PS-180-16F's greater disk capacity and higher transfer speed?

Jeff Davison
Vice-President
Dacor Corp.
Northfield, Ill.

HAUPPAUGE COMPUTER WORKS, INC.: The incompatibility that has been found between our Motherboard 386 and Perstors PS-180-16F does not have an easy solution. There are other high-performance controllers that do work with the Hauppauge Motherboard without any problems, such as Western Digital's ESDI Controller. Currently, we do not have a solution to the Perstors incompatibility, but we are working on it.

We are using a mass storage subsystem from Racet. If we run it under Novell, Inc.'s Netware operating system, will we still be able to do mirroring and duplexing?

Alan Frazier
Vice-President
First Interstate Bank
Los Angeles

RACET COMPUTERS LTD.: Our PCMS software provides mirroring and duplexing of data in Microsoft Corp. MS-DOS applications. Under Novell, we elected to use Netware SFT because of its excellent fault-tolerant capabilities. With SFT and PCMS, it is easy to do either mirroring of data or duplexing, depending on the level of fault tolerance you require.

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What's news on color monitors

BY CHARLES BERMANT

Corporate users who like their personal computer applications served up with color can choose either an a la carte IBM Video Graphics Array (VGA) or an IBM Enhanced Graphics Adapter (EGA) — a mixed menu on a multiscan monitor that works with several standards.

Bermant is a free-lance writer based in Gladstone, Ore.

EGA monitors are not obsolete, despite some claims to the contrary. Still, EGA is losing ground as standards and capabilities lead more dedicated users to VGA. Market research firm International Data Corp. (IDC) in Framingham, Mass., for example, projects that sales of EGA monitors will increase at an annual rate of 10% over the next three years, compared with 57% for VGA monitors.

VGA's advantages are 640- by 480-pixel resolution, access to unlimited colors through analog output (although current graphics boards can support only 256 colors at once) and a range of software support.

Multiscan or variable-scan displays are not as popular as VGA monitors. IDC pegs the annual increase in sales of these units at 29% during the next three years. Still, for many users, these options are a good way to hedge bets.

Multiscan capabilities

In addition to accepting VGA and EGA output, multiscan monitors can also display IBM Color Graphics Adapter (CGA) and Hercules Computer Technology, Inc.-standard graphical output. Depending on the scan rate, they can work with higher or lower frequencies and thus resolutions.

This capability allows users to run existing software and theoretically accommodates the next incremental increase in resolution. An EGA user, for instance, can upgrade to VGA with just the addition of a board.

The buying decision is not quite so clear for current VGA users. Multiscan monitors can cost as much as $300 more than dedicated VGA monitors, and while it is possible to add 800- by 600-pixel super VGA to a multiscan monitor, the upgrade pushes the limits of the current crop.

While the VGA vs. multiscan debate continues, some interesting new products are emerging that may be the harbingers of new design trends.

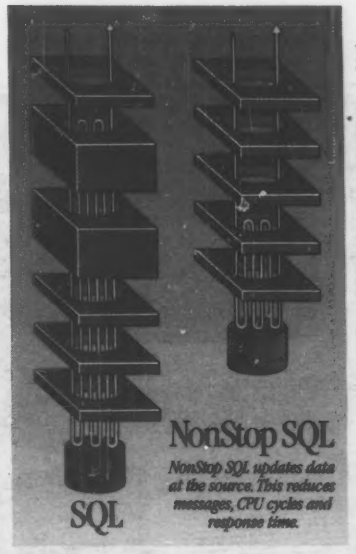
Zenith Data Systems in Glenview, Ill., has thrown considerable marketing weight behind a fancy VGA product, the $999 "flat tension mask" screen. The 14-in. monitor combines a flat screen with proprietary technology to provide an image that is almost concave. At 14 inches, the Zenith screen is also one or two inches larger than today's norm.

A flat screen offers an advantage over the standard convex curve in that it does not distort images at the edges. It also cuts down on glare and enhances clarity and contrast.

Larger monitors offer the advantage of finer resolution. They also offer greater opportunity to take advantage of multiple-windowing capabilities.

Zenith is not alone in its push toward a bigger and flatter display. A $995 multiscan monitor from Relisys in Milpitas, Calif., boasts a flat screen that is one inch larger than that of the Zenith offering. This display also accommodates IBM's 8514 extended VGA standard, with a 1,024- by 768-pixel resolution.

Still on the horizon, but an important emerging possibility, according to Jim Cavuoto, editor of "Micro Publishing Report," a Torrance, Calif.-based newsletter, is the capability for monitors to accept standard television video signals for incorporation into the PC environment. •



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Amdek (800) 722-6335	Smart Scan 735	IBM PC, XT, AT, PS/2 and compatibles	High-resolution graphics, CAD	800 x 600	Non-interlaced	EGA, VGA, CGA[1], PGA[2]	Analog, TTL	No	256,000	256	15.75-35	50-70	14	12.25 x 14.25 x 14.50	Text mode button, tilt and swivel stand, front-mounted brightness control	$795
	Monitor/ 600T	IBM PC, XT, AT and compatibles	Mid-resolution graphics	640 x 200, 320 x 200	Non-interlaced	CGA	RGB, TTL	No	16	4	15.75	60	14	13.25 x 14.25 x 15.25	Text mode button, tilt and swivel stand, front-mounted brightness control	$550
	Monitor/ 632	IBM PC, XT, AT, PS/2 and compatibles	General graphics	640 x 350, 640 x 400, 640 x 480, 700 x 400	Non-interlaced	VGA	Analog	No	256,000	256	31.465	50-70	13	12.48 x 14.29 x 15.47	Text mode button, tilt and swivel stand, front-mounted brightness control	$595
	Monitor/ 732	IBM PC, XT, AT, PS/2 and compatibles	CAD/CAM	640 x 350, 640 x 400, 640 x 480, 720 x 400	Non-interlaced	VGA	Analog	No	256,000	256	31.465	50-70	12	12.63 x 12.67 x 14.88	Text mode button, tilt and swivel stand, front-mounted brightness control	$635
	Monitor/ 722	IBM PC, XT, AT and compatibles	High-resolution graphics	720 x 240, 720 x 350	Non-interlaced	EGA, CGA	RGB, TTL	No	64	16	15.75-21.8	60	13	12.4 x 14.3 x 15.7	Text mode button, tilt and swivel stand, front-mounted brightness control	$750
AST Research (714) 863-1333	Premium Display/ VGA	IBM XT, AT, PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	VGA	None	No	262,144	256	NP	70	14	12.2 x 14.1 x 14.2	NP	$695
	Premium Display/ Enhanced Color	IBM XT, AT, PS/2 and compatibles	General graphics	640 x 350	Non-interlaced	EGA, CGA	None	No	64	16	NP	60	14	12.2 x 14.1 x 14.2	NP	$695
Aydin Controls, a division of Aydin Corp. (800) 345-8899	VGA/20	IBM PC, XT, AT, PS/2 and compatibles	CAD/CAM, presentation graphics	1024 x 768	Both	VGA	Analog	Yes	256,000	256	31.5-35.5	60-87	19	18.8 x 19 x 19.5	Antiglare screen, high-contrast bonded panel, rack mount kit, tilt and swivel base, touchscreen	$3,395
	Model 8936	IBM PC, XT, AT, PS/2 and compatibles	CAD/CAM	640 x 480; 1024 x 1024	Both	PGC	Analog	Yes	256,000	253	25-35	40-70	19	18.8 x 19 x 19.5	Antiglare screen, high-contrast bonded panel, rack mount kit, tilt and swivel base, touchscreen	$2,850
	Model 8966	IBM PC, XT, AT and compatibles	Business presentation graphics	640 x 350	Non-interlaced	EGA, CGA	TTL	Yes	64	Board determined	21.8	60	19	18.8 x 19 x 19.5	Antiglare screen, high-contrast bonded panel, rack mount kit, tilt and swivel base, touchscreen	$2,395
	Model 8956	IBM PC, XT, AT, PS/2 and compatibles	CAD/CAM	1024 x 768	Non-interlaced	None	None	Yes	256,000	256	47-52	40-70	19	18.8 x 19 x 19.5	Antiglare screen, high-contrast bonded panel, rack mount kit, tilt and swivel base, touchscreen	$3,195
	Model 8965	IBM PC, XT, AT, PS/2 and compatibles	CAD/CAM	1280 x 1024	Non-interlaced	None	None	Yes	256,000	256	63-65	40-70	19	18.8 x 19 x 19.5	Antiglare screen, high-contrast bonded panel, rack mount kit, tilt and swivel base, touchscreen	$3,500
Barco Industries, Inc. (603) 880-1430	CDCT 6351B	Any VGA, CGA compatible	Desktop publishing	1024 x 1024	Both	VGA, CGA	TTL, Analog, RGB	No	Board determined	Board determined	15-34	45-80	19	382mm x 482mm x 530mm	Antireflective coating, tilt and swivel stand, rack mount, remote control	$4,510
Colorgraphic Communications Corp. (404) 455-3921	EG 1522	IBM PC, XT, AT and compatibles	Process control, CAD/CAM, CIM	640 x 200, 640 x 350	Non-interlaced	EGA, CGA	TTL	No	64	16	15.75-21.83	40-10	19	16 x 19.5 x 20	NP	$1,900
	EG 2040	IBM PC, XT, AT and compatibles	Process control, CAD/CAM, CIM	640 x 350, 640 x 400, 640 x 480	Non-interlaced	EGA	TTL	No	64	16	20-32	NP	19	16 x 19.5 x 20	NP	$1,900
Conrac Display Products, Inc. (818) 303-0095	7250 Series	IBM PC, XT, AT, PS/2 and compatibles	General graphics, high-resolution graphics	1024 x 1024	Interlaced	EGA, CGA, PGA, MDA[3], VGA	TTL	No	Board determined	Board determined	15.75-37	47-86	19	13.98 x 19.02 x 20.90	Tilt and swivel base	$2,995
Electrohome Ltd. (519) 744-3158	ECM 1300 Series	IBM PC, XT, AT, PS/2 and compatibles	General graphics	910 x 675	Non-interlaced	EGA, VGA, CGA, PGA	TTL	No	Board determined	NA	15-38	50-85	13	13.25 x 14.4 x 15.6	Tilt and swivel base	$1,198
	ECM 1900 Series	IBM PC, XT, AT and compatibles	General graphics, CAD/CAM	1230 x 990	Non-interlaced	EGA, VGA, CGA, PGA	NP	No	NA	NA	15-36	45-86	19	17.2 x 19 x 20.8	Tilt and swivel base	$2,995
Goldstar Technology, Inc. (408) 737-8575	1410 CGA	IBM XT, AT and compatibles	General graphics	640 x 200	Non-interlaced	CGA	TTL, RGB	No	64	16	15.75	60	14	14.4 x 15.4 x 12.8	Tilt and swivel base	$349
	1420 EGA	IBM XT, AT and compatibles	General graphics	640 x 200, 640 x 350	Non-interlaced	CGA	TTL, RGB	No	64	16	15.75-21.85	60	14	14.7 x 15.4 x 13.1	Antiglare screen, tilt and swivel base	$559
	1430 VGA	IBM XT, AT and compatibles	CAD, CAE, CAM	720 x 350, 720 x 400, 640 x 480	Non-interlaced	VGA	RGB, Analog	No	Board determined	256	31.5	60-70	14	13.1 x 15.4 x 14.7	Antiglare screen, tilt and swivel base	$659
	1440 Super	IBM XT, AT and compatibles	CAD, CAE, CAM	800 x 560	Non-interlaced	EGA, VGA, CGA	TTL, Analog	No	Board determined	256	15-35	45-90	14	14 x 15 x 12.2	Antiglare screen, tilt and swivel base	$799

[1]Color Graphics Adapter [2]Professional Graphics Adapter [3]Monochrome Display Adapter

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

PRODUCT SPOTLIGHT

COMPANY	PRODUCT	HARDWARE CAPABILITIES	PRIMARY APPLICATIONS	RESOLUTION (HORIZONTAL BY VERTICAL PIXELS)	INTERLACED OR NONINTERLACED	GRAPHICS BOARDS SUPPORTED	OTHER STANDARDS SUPPORTED	SPECIAL SUBSYSTEM CARD REQUIRED	TOTAL NUMBER OF COLORS IN PALETTE	NUMBER OF DISPLAY COLORS	HORIZONTAL SCAN FREQUENCY (kHz)	VERTICAL SCAN FREQUENCY (Hz)	SCREEN AREA IN DIAGONAL INCHES	FOOTPRINT IN INCHES	SPECIAL FEATURES	PRICE
Hewlett-Packard Co. (800) 752-0900	HP Video Graphics Color Display	IBM AT and compatibles	Business graphics, low-end CAD/CAE/CAM	640 x 480	Non-interlaced	EGA, VGA, CGA	None	No	262,144	256	31.5	60-70	13	12.3 x 13.9 x 15.4	Antiglare screen, tilt and swivel base, touchscreen option	$695
IBM Contact local sales office	IBM Personal System/2 Color Display 8512	IBM XT, AT, PS/2 with VGA-compatible display adapter	General graphics	640 x 480	Non-interlaced	VGA	8514	Only for XT, AT	Board determined	Board determined	NP	60	14	304mm x 355mm x 394mm	Tilt and swivel base	$623
	IBM Personal System/2 Color Display 8513	IBM XT, AT, PS/2 with VGA-compatible display adapter	General graphics	640 x 480	Non-interlaced	VGA	8514	Only for XT, AT	Board determined	Board determined	NP	60-70	12	312mm x 321mm x 362mm	NP	$750
	IBM Personal Systems/2 Color Display 8514	IBM PS/2	General graphics	1024 x 763	Both	VGA	8514	Yes	Board determined	Board determined	NP	NP	16	360mm x 400mm x 415mm	NP	$1,620
Intecolor Corp. (404) 623-9145	Megatrend	IBM PC, XT, AT	General graphics, industrial control	640 x 350	Non-interlaced	EGA, CGA	TTL	No	64	16	21.85-15.75	NP	20	18.6 x 18.9 x 20.5	Antiglare screen, tilt and swivel base, demagnetizing, touchscreens, rack mount	$2,195
	Megatrend/2 EO1923	IBM PC, XT, AT, PS/2 and compatibles	General graphics, CAD, industrial control	640 x 480	Non-interlaced	VGA	Analog	No	262,144	256	31.5	NP	20	18.6 x 18.9 x 20.5	Antiglare screen, tilt and swivel base, demagnetizing, touchscreens, rack mount	$2,295
	Megatrend/2 EO1921	IBM PC, XT, AT, PS/2 and compatibles	General graphics, CAD/CAM	1024 x 768	Both	VGA	8514/A	No	262,144	256	31.5-35.5	NP	20	18.6 x 18.9 x 20.5	Antiglare screen, tilt and swivel base, demagnetizing, touchscreens, rack mount	$2,695
MAI Basic Four, Inc. (714) 731-5000	14-in. Color Monitor	IBM PC, XT, AT and compatibles	General graphics	640 x 200	NP	CGA	NA	Yes	16	16	15.75	6	14	13.3 x 14.3 x 15.3	Tilt and swivel base	$595
Maxar PC (408) 733-0810	Maxar 2	IBM PC, XT, AT and compatibles	General graphics, CAD, CAM	820 x 620	Interlaced	EGA, VGA	Analog, TTL	No	Board determined	Board determined	15-35	50-100	14	310mm x 368mm x 378mm	Antiglare screen, tilt and swivel base	$879
Microvitec, Inc. (404) 991-2246	Touchtech 604	IBM PC, XT, AT and compatibles	Presentation graphics, process control, desktop publishing, image processing, interactive video	1024 x 768; 640 x 200; 800 x 600	Both	EGA, VGA, CGA	Analog, TTL, NTSC, PAL	No	Board determined	Board determined	15-36.5	45-100	15	337mm x 414mm x 434mm	Touchscreen	$1,499
	1019	IBM PC, XT, AT and compatibles	Presentation graphics, process control, CAD/CAM, CAE, desktop publishing, image processing	1024 x 1024; 640 x 200; 800 x 600	Both	EGA, VGA, CGA	Analog, TTL	No	Board determined	Board determined	15-36.5	45-100	20	445mm x 470mm x 494mm	Antiglare screen, short/long persistence phosphors, tilt and swivel base, rack mount and open frame, touchscreen, resistive overlay	$2,395
	1014	IBM PC, XT, AT and compatibles	Presentation graphics, process control, CAD/CAM, CAE, desktop publishing, image processing	1024 x 768; 640 x 200; 800 x 600	Both	EGA, VGA, CGA	Analog, TTL	No	Board determined	Board determined	15-36.5	45-100	14	362mm x 412mm x 432mm	Antiglare, short/long persistence phosphors, tilt and swivel base, rack mount and open frame, touchscreen, resistive overlay	$1,199
	3019	IBM PC, XT, AT and compatibles	Presentation graphics, process control, CAD/CAM, CAE, desktop publishing, image processing	1024 x 768; 1280 x 1024	Non-interlaced	EGA, VGA, CGA	Analog	No	Board determined	Board determined	48-64	45-75	20	520mm x 510mm x 470mm	NP	$3,495
	1012	IBM PC, XT, AT and compatibles	Stock brokerage, financial trading, process control	1024 x 768; 640 x 200; 800 x 600	Both	EGA, VGA, CGA	Analog, TTL	No	Board determined	Board determined	15-36.5	45-100	12	276mm x 306mm x 347mm	Stackable, RFI shielded metal enclosure	$1,795
Mitsubishi Corp. (714) 993-2866	M710C	NP	General graphics, CAD, CAM/CAE, desktop publishing	640 x 200	Both	EGA, VGA, CGA, PGA	None	No	4	4	NP	15.75	12.75	14 x 14 x 15.9	Tilt and swivel base, antiglare screen	$375
	M210E	NP	General graphics, CAD, CAM/CAE, desktop publishing	640 x 350	Both	EGA, VGA, CGA, PGA	None	No	16-64	16-64	NP	15.75	12.75	14 x 14 x 15.8	Tilt and swivel base, antiglare screen	$545
	M210V	NP	General graphics, CAD, CAM/CAE, desktop publishing	640 x 480	Both	EGA, VGA, CGA, PGA	None	No	256+	256+	NP	15.75	12.75	14 x 14 x 15.8	Tilt and swivel base, antiglare screen	$559
	M710M	NP	General graphics, CAD, CAM/CAE, desktop publishing	800 x 600, 1024 x 768	Both	EGA, VGA, CGA, PGA	TTL, Analog RGB	No	16-64, 256+	16-64, 256+	NP	15.75	12.75	14 x 14 x 15.8	Tilt and swivel base, antiglare screen	$695
Mitsubishi Electronics America, Inc. (213) 217-5732	HL-6905TK	Depends on graphics controller	CAD, CAM, presentation graphics	1280 x 1024	Non-interlaced	VGA, PGA	Analog, TTL	No	Board determined	Board determined	30-64	50-90	19	17.7 x 19.6 x 21	Contrast tinted glass, microprocessor-enhanced programmable display settings	$3,650
	HA-3905ADK	Depends on graphics controller	CAD, CAM, presentation graphics	800 x 600, 1024 x 800	Non-interlaced	EGA, VGA, CGA, PGC	Analog, TTL, monochrome	No	Board determined	Board determined	15.7-36	45-80	19	17.7 x 19.6 x 21	Antiglare screen, auto-tracking	$2,670
	XC-1429C	Depends on controller	Text processing, graphics	640 x 480	Non-interlaced	VGA	Analog	No	Board determined	Board determined	31.5	60-70	13	12.3 x 13.9 x 15.4	Antiglare screen, high resolution, 0.288mm dot pitch	$685
Mouse-tronix Corp. (614) 891-2222	High Resolution Color Monitor	IBM XT, AT and compatibles	General graphics	640 x 480-1600 x 1280	EGA, VGA	All high-resolution standards	NP	NP	NP	NP	31.5-74.4	NP	NP	19	15.5 x 20 x 23	Antiglare screen, tilt and swivel base	$3,695-$4,395
Nanao USA Corp. (213) 325-5301	8068H-US	IBM XT, AT	General graphics	820 x 620	Non-interlaced	EGA, VGA, CGA, PGA	NP	No	Board determined	256	15.5-35	50-80	13	356mm x 400mm x 325mm	Tilt stand, TTL cable	$899
	9500-US	IBM XT, AT	CAD/CAM	1280 x 1024	Non-interlaced	VGA, PGA	NP	No	Board determined	256	31.5-78	55-80	19	496mm x 561mm x 471mm	Tilt stand, BNC and VGA cable	$3,999
	9070S-US	IBM XT, AT	General graphics, CAD/CAM	1280 x 800	Both	EGA, VGA, PGA	NP	No	Board determined	256	20-50	50-80	15	400mm x 450mm x 420mm	Tilt stand, TTL and VGA cable	$1,699
	8060S-US	IBM XT, AT	General graphics	820 x 620	Non-interlaced	EGA, VGA, CGA, PGA	NP	No	Board determined	256	15.5-35	50-80	13	356mm x 400mm x 325mm	Tilt stand, TTL cable	$936

COMPANY	PRODUCT	HARDWARE CAPABILITIES	PRIMARY APPLICATIONS	RESOLUTION (HORIZONTAL BY VERTICAL PIXELS)	INTERLACED OR NONINTERLACED	GRAPHICS BOARDS SUPPORTED	OTHER STANDARDS SUPPORTED	SPECIAL SUBSYSTEM CARD REQUIRED	TOTAL NUMBER OF COLORS IN PALETTE	NUMBER OF DISPLAY COLORS	HORIZONTAL SCAN FREQUENCY (kHz)	VERTICAL SCAN FREQUENCY (Hz)	SCREEN AREA IN DIAGONAL INCHES	FOOTPRINT IN INCHES	SPECIAL FEATURES	PRICE
Panasonic Industrial Co. (201) 348-7000	CT-1400 MG	IBM PCs and compatibles	General graphics	370 lines	Both	CGA	NTSC, TTL, RGB, teletext, videotext	No	Board determined	Board determined	NP	15.75	14	NP	NP	$900
Philips Data Display Systems Co. (617) 938-5455	C 2064N	IBM PC, XT, AT, PS/2 and compatibles	Industrial and military applications	1024 x 768; 1280 x 1024	Non-interlaced	NP	Analog	Yes	Board determined	Board determined	48-64	60	19	470mm x 506mm x 527mm	HEA antiglare panel	NP
	C 2048N	IBM PC, XT, AT, PS/2 and compatibles	Industrial and military applications	1024 x 768; 1280 x 1024	Non-interlaced	NP	Analog	Yes	Board determined	Board determined	48-64	60	19	470mm x 506mm x 527mm	HEA antiglare panel	NP
	C 1664N	IBM PC, XT, AT, PS/2 and compatibles	Industrial and military applications	1024 x 768; 1280 x 1024	Non-interlaced	NP	Analog	Yes	Board determined	Board determined	48-64	60	16	397mm x 408mm x 480mm	HEA antiglare panel	NP
	C 1648N	IBM PC, XT, AT, PS/2 and compatibles	Industrial and military applications	1024 x 768; 1280 x 1024	Non-interlaced	NP	Analog	Yes	Board determined	Board determined	48-64	60	16	397mm x 408mm x 480mm	HEA antiglare panel	NP
Princeton Graphics Systems (609) 683-1660	High Resolution Color Monitors	NP	General graphics	800 x 600	NP	EGA, VGA, CGA, PGA	Analog, TTL	No	Board determined	256	15-35	45-120	12	314mm x 320mm x 315mm	Antiglare screen	$849
Relisys (408) 945-5155	RE 5155	NP	General graphics, CAD, CAE, CAM	800 x 600	Non-interlaced	EGA, VGA, CGA, PGA	TTL, Analog	No	Board determined	Board determined	15-35	50-70	14	14.6 x 14.8 x 15.3	Antiglare screen	$795
	RE 9513	NP	General graphics, CAD, CAE, CAM	720 x 480	Non-interlaced	VGA	NA	No	Board determined	Board determined	31	50, 60, 70	14	15.2 x 14.7 x 14.5	Antiglare screen	$645
	RE 1520	NP	General graphics	1024 x 768	Non-interlaced	VGA	None	No	Board determined	Board determined	30-50	50-80	15	15.6 x 14.8 x 16.4	Flat screen	$995
Qubie (800) 821-4478	MM1464W	IBM XT, AT, PS/2	General graphics	640 x 200	Non-interlaced	CGA	TTL	No	64	16	15.75-35	50-70	14	364mm x 342mm x 376mm	Tilt and swivel base	$239
Quimax Systems, Inc. (408) 773-8282	DM-1502 (CGA)	IBM PC, XT, AT and compatibles	General graphics	640 x 260	Non-interlaced	CGA	TTL, Analog	No	16, 64, 256	16, 64, 256	15.75	60	12	14 x 14 x 14.6	Antiglare screen, dark glass	$499-$699
	DM-2214 (EGA)	IBM PC, XT, AT and compatibles	General graphics	640 x 260	Non-interlaced	EGA	TTL, Analog	No	16, 64, 256	16, 64, 256	15.75-21.85	60	14	14 x 14 x 14.6	Antiglare screen, dark glass	$499-$699
	DM-3114 (VGA)	IBM PS/2	General graphics	720 x 350	Non-interlaced	VGA	TTL, Analog	No	16, 64, 256	16, 64, 256	31.5	50-70	15	14 x 14 x 14.6	Antiglare screen, dark glass	$499-$699
	DM-3112/ 3114 (VGA)	IBM PS/2	General graphics	720 x 480	Non-interlaced	VGA	TTL, Analog	No	16, 64, 256	16, 64, 256	31.5	NP	15	14 x 14 x 14.6	Antiglare screen, dark glass	$499-$699
Sampo Corporation of America (404) 449-6320	HR 3084	IBM PC, XT, AT, RT, PS/2 Model 50, 60, 70, 80	CAD, CAE, CAM, desktop publishing	1280 x 1024	Non-interlaced	None	None	Yes	Board determined	Board determined	64	60	20	443mm x 478mm x 532mm	Tilt and swivel base, antiglare screen	$2,695
	Tri-Sync 3000	IBM PC, XT, AT, PS/2 Model 25, 30, 50, 60, 70, 80	General graphics, process control, CAD, CAE, CAM	640 x 480; 1024 x 768	Both	EGA, VGA, CGA, PGA	IBM 8514, Mac II	No	Board determined	Board determined	31-35.5	60-90	20	441mm x 447mm x 470mm	Tilt and swivel base, antiglare screen	$1,895
	Autoscan 1000	IBM PC, XT, AT, PS/2 Model 25, 30, 50, 60, 70, 80	General graphics, process control, CAD, CAE, CAM, word processing	800 x 600	Non-interlaced	EGA, VGA, CGA, PGA	IBM 8514, Mac II	No	Board determined	Board determined	37	60	14	304mm x 399mm x 420mm	Tilt and swivel base, antiglare screen	$849
Samsung Electronics of America, Inc. (201) 587-9600	CQ4551	IBM VGA compatible	General graphics	720 x 350; 720 x 400; 640 x 480	NP	VGA	None	No	Board determined	Board determined	31.5	60-70	14	14.16 x 14.5 x 15.8	Antiglare screen, tilt and swivel base	$699
Seiko Instruments USA, Inc. (408) 923-4300	CM-1420	IBM XT, AT, PS/2 and compatibles	CAD/CAM, CAE	1024 x 768	Non-interlaced	None	None	Yes	Board determined	Board determined	NP	60	14	12.1 x 14.1 x 17.4	Antiglare screen	$1,795
	CM-1430	IBM PC, XT, AT, PS/2 and compatibles	Business graphics, CAD, general graphics	640 x 480; 1024 x 768	Both	EGA, VGA, CGA, PGA	NP	Yes	Board determined	Board determined	NP	43.5-50	14	14.2 x 14.1 x 17.4	Antiglare screen	$995
Sony Computer Peripheral Products Division (201) 930-1000	PUM-2530	IBM PC, XT, AT and compatibles	General graphics	640 x 200	Both	CGA	NTSC, TTL	Yes	Board determined	Board determined	15.75	60	25	20 x 25.75 x 19.4	Tuner speakers	$1,695
	GDM-1953	IBM PC, XT, AT and compatibles	CAD, CAE, CAM	1280 x 1024	Non-interlaced	CAD	None	Yes	256,000	256	64	60	19	17.6 x 18.9 x 20.1	Tilt and swivel base	$4,195
	CPD-1320	IBM PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	VGA	None	Yes	256,000	256	31.5	60-70	13	13 x 14.6 x 16.4	Tilt and swivel base	$795
	CPD-1303	IBM PC, XT, AT, PS/2 and compatibles	General graphics	800 x 600	Both	EGA, VGA, CGA, PGA	TTL	Yes	256,000	256	15.75-36	60-100	13	13 x 14.6 x 16.4	Tilt and swivel base	$825
	CPD-1302	IBM PC, XT, AT, PS/2 and compatibles	General graphics	900 x 560	Both	EGA, VGA, CGA, PGA	TTL	Yes	256,000	256	15.75-36	60-100	13	13 x 14.6 x 16.4	Tilt and swivel base	$995
Tandy Corp. (817) 390-3700	CM-11 RGBI Color Monitor	IBM XT, AT and compatibles	General graphics	640 x 225	Non-interlaced	CGA	TTL	No	16	16 or 4	15.75	60	13	12.53 x 13.68 x 15.12	NP	$399.95
	EGM-1	IBM XT, AT and compatibles	General graphics, CAD/CAM, CAE	640 x 350; 640 x 200	Non-interlaced	EGA	TTL	No	64	64 or 16	15.75-21.8	50-60	14	12.8 x 15.75 x 15.5	NP	$699
	VGM-300 Analog Monitor	IBM XT, AT and compatibles	General graphics, CAD/CAM, CAE	640 x 480; 320 x 200	Non-interlaced	VGA	TTL	No	256,000	256 or 16	31.5	60-70	NP	12.2 x 14.5 x 15	NP	$499.95
	VGM-300 Analog Monitor	IBM XT, AT and compatibles	General graphics, CAD/CAM, CAE	640 x 480; 320 x 200	Non-interlaced	VGA	TTL	No	256,000	256 or 16	31.5	60-70	14	12.2 x 14.5 x 15	NP	$629

PRODUCT SPOTLIGHT

COMPANY	PRODUCT	HARDWARE CAPABILITIES	PRIMARY APPLICATIONS	RESOLUTION (HORIZONTAL BY VERTICAL PIXELS)	INTERLACED OR NONINTERLACED	GRAPHICS BOARDS SUPPORTED	OTHER STANDARDS SUPPORTED	SPECIAL SUBSYSTEM CARD REQUIRED	TOTAL NUMBER OF COLORS IN PALETTE	NUMBER OF DISPLAY COLORS	HORIZONTAL SCAN FREQUENCY (kHz)	VERTICAL SCAN FREQUENCY (Hz)	SCREEN AREA IN DIAGONAL INCHES	FOOTPRINT IN INCHES	SPECIAL FEATURES	PRICE
Tatung Company of America, Inc. (213) 979-7055	CM-1480	IBM PC, XT, AT and compatibles	General graphics	640 x 350	Non-interlaced	EGA	None	No	64	16	22	60	14	17mm x 365mm x 400mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$699
	CM-1492	IBM PC, XT, AT, PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	VGA	None	No	262,144	256	31.5	50-60-70	12	294mm x 395mm x 400mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$595
	CM-1490	IBM PC, XT, AT, PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	VGA	None	No	262,144	256	31.5	50-60-70	14	394mm x 395mm x 400mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$685
	CM-1460	IBM PC, XT, AT and compatibles	General graphics	640 x 480	Non-interlaced	CGA	None	No	16	4	15.75	60	14	294mm x 395mm x 400mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$529
	CM-1495	IBM PC, XT, AT and compatibles	General graphics, desktop publishing, CAD/CAM	640 x 480	Non-interlaced	EGA, VGA, CGA, PGA	Super EGA	No	Board determined	256	15-35	47-73	14	294mm x 395mm x 400mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$849
	CM-1296	IBM PC, XT, AT, PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	VGA	None	No	262,144	256	31.5	50-60-70	12	288mm x 322mm x 373mm	Antiglare screen, tilt and swivel base, reverse video switch, text mode switch	$625
Taxan USA Corp. (408) 946-3400	Multivision 770+	IBM XT, AT, PS/2 and compatibles	Presentation graphics, general graphics	800 x 600	Non-interlaced	EGA, VGA, CGA, PGA	TTL, Analog	No	Board determined	Board determined	15-35	50-90	14	12.2 x 15.16 x 16.02	None	$915
	Ultra Vision 1000	IBM XT, AT, PS/2 and compatibles	Presentation graphics, general graphics, CAD, CAE,CAM	1600 x 1200	Both	VGA, PGA, 8514	None	No	Board determined	Board determined	30-78	50-80	19	19.2 x 18.6 x 21.6	None	$3,695
Toshiba America, Inc. (312) 945-1900	Flat & Square Color Monitor (48 kHz)	IBM AT, PS/2	CAD, CAM, CAE, desktop publishing	1024 x 768	Non-interlaced	VGA	None	No	Board determined	Board determined	46-50	50-70	21	19 x 20 x 21	Antiglare screen	$3,495
	Flat & Square Color Monitor (84 kHz)	IBM AT, PS/2	CAD, CAM, CAE, desktop publishing	1280 x 1024	Non-interlaced	None	None	Yes	Board determined	Board determined	46-50	50-70	21	19 x 20 x 21	Antiglare screen	$3,795
TW Casper Corp. (408) 922-0188	TM-5157/Multi-Scan Color Monitor	IBM PC, XT, AT, PS/2 and compatibles	General graphics	1024 x 768; 800 x 600	Both	EGA, VGA, CGA, PGA	TTL	No	Board determined	Board determined	15-45	47-100	NP	310mm x 372mm x 395mm	Nonglare dark tint tube	$540
Unisys Corp. (215) 542-4011	Unisys Enhanced Resolution Color	IBM PC, XT, AT and compatibles	General graphics	640 x 350	Non-interlaced	EGA, CGA	None	No	64	16	31.5	60	14	13.2 x 14.3 x 15.6	Tilt and swivel base	$695
Video Monitors, Inc. (715) 834-7785	C 8000	IBM XT, AT, PS/2 and compatibles	Board determined	1024 x 1024, 1280 x 1024	Both	EGA, VGA, CGA, PGA	NP	Yes	Board determined	Board determined	64	90	19, 13, 17	18 x 18 x 18	Antiglare screen, cabinet style, touchscreen	$1,500 and up
VTE Hi-Beam, Inc. (516) 364-0840	Hi-Beam Video Data Projectors Cx1	IBM PS/2	General graphics	1200 lines	Both	EGA, VGA, CGA, PGA	NTSC, TTL	No	Board determined	Board determined	45-100	15,000-42,000	72, 240	11.5 x 24 x 33.5	NP	$9,138
	Hi-Beam Video Data Projectors Cx2	IBM PS/2	General graphics	1200 lines	Both	EGA, VGA, CGA, PGA	NTSC, TTL	No	Board determined	Board determined	45-100	15,000-42,000	72-240	11.5 x 24 x 33.5	NP	$13,684
Wyse Technology, Inc. (800) 438-9973	WY-650 VGA-Compatible	IBM XT, AT, PS/2 and compatibles	General graphics	640 x 480	Non-interlaced	EGA, VGA, CGA	NP	Yes	256	256	31.5	50-70	12.4	12.63 x 12.67 x 14.88	Antiglare screen	$669
Xtron Computer Equipment Corp. (212) 344-6583	CM-14E	IBM PC, XT, AT and compatibles	NP	640 x 350	Non-interlaced	EGA, CGA	TTL	Yes	64	16	15.75-21.85	60	14	14 x 13.5 x 15	Antiglare screen	$649.95
	CM-149I	IBM PS/2	CAD	720 x 480	NP	VGA, PGA	Analog	Yes	250,000	250	31.5	60-70	14	14 x 13.5 x 15	Antiglare screen	$719.95
	CM-147M	IBM PC, XT, AT, PS/2 and compatibles	CAD	800 x 600	NP	EGA, VGA, CGA, PGA	Analog, TTL	Yes	250,000	250	15.5-36	50-70	14	12.5 x 14 x 14.5	Antiglare screen	$799
Zenith Data Systems (800) 842-9000	ZVM-1490	IBM PC, XT, AT, XT-286, Compaq Deskpro 286, 386, Zenith Z-series	CAD/CAM and general graphics	640 x 480	Non-interlaced	EGA, VGA, CGA, MDA, Hercules	Analog	No	256,000	256	31.49	60-70	14	12.55 x 14.75 x 15.5	Antiglare screen, tilt and swivel base	$999

Building an assistant

Case study: NYSE creates expert system prototype as financial analyst aid

BY JESSICA KEYES

In 1987, the New York Stock Exchange decided the time was ripe for the momentous change from paper processing to decision processing in the area of financial review. As part of this effort, the exchange voted to explore artificial intelligence — specifically, mainframe expert systems. At the exchange's Technology and Product Development Group, we targeted the financial review department as a likely place for the development of an expert system prototype.

Reams of data — balance sheets, profit-and-loss statements, capital worksheets and the like — are continually examined by the exchange's financial analysts to determine the financial viability of member organizations. The approximately 700 member firms are required to submit a report — called the Financial and Operational Combined Uniform Single-Form, or FOCUS, report — periodically to the department for review.

The analysts scrutinize the financial items contained in this long document, looking for trends and financial or operational problems according to the standards set down by the NYSE rules that govern the member firms.

The data passing through the analysts' offices is truly staggering, and it increases daily as the exchange's rules are amended and the investment environment changes. In order to do their jobs properly, this department's users must act as everything from financiers to market analysts to loan analysts to auditors. The exchange's general managers knew full well that the amount of raw data analyzed would soon exceed the capabilities of even the most experienced and bright financial analysts.

Keyes is managing director of the Technology and Product Development Group at the New York Stock Exchange in New York.

The users

The original third-generation computer systems supporting these users were built on IBM hardware using CICS as a transaction monitor and IBM's IMS as a hierarchical database.

Personal computers with multiple-session capabilities (IBM 3270 PCs in the past and, more recently, IBM Personal System/2s) permit the users to access one or more of the 23 conventional DP systems — including complaint systems, enforcement systems and rules systems — they need to do their jobs. In addition to this mainframe and microcomputer power, the users also possess fourth-generation language capability by using Information Builders, Inc.'s Ramis for ad hoc query and analysis.

When the technology group decided mainframe expert systems were worth investigating, it was to these technically proficient end users that we went. We selected two financial analysts who would be used as the "experts" for the process. These staff members would also likely be the user champions if our effort was successful.

In addition, we chose one of our own systems analysts and an outside consultant to be the knowledge engineers for the project. The consultant, hired from Knowledge Associates in Riverdale, N.Y., also functioned as a trainer for the in-house staff.

The goals

At this point, we outlined a threefold goal for the implementation of our expert system prototype:

- Because we did not possess many technical staff members who were well-versed in the art of knowledge engineering, we wondered if, indeed, we could turn a "typical" systems analyst

ANTHONY RUSSO

- **The move from paper to decision processing**
- **Coping with ever-increasing amounts of data**
- **But how to sell it to management?**

into a knowledge engineer.

- We also wanted to determine whether mainframe expert systems were practical, given capacity constraints and response-time considerations.
- Finally, given the complexity of the users' jobs, we wondered if we could successfully acquire the users' knowledge in the format required by the selected shell, which initially was Cullinet Software, Inc.'s Application Expert and ultimately was ADS by Aion Corp.

In order to answer these questions, we selected a manageable problem to begin our foray into mainframe expert systems. Selecting the entire job description of the financial analysts would have been foolhardy. Given the first-time nature of this project, we decided the problem selected would be one that all parties agreed was clear-cut but dramatic.

In our view, this was necessary to ultimately sell it to senior management. The pilot would need to show increasing efficiencies, greater productivity or both. Selecting a cut-and-dried problem that can be done by the expert in a few seconds — although certainly useful when experimenting with the what and why of expert systems — would not be enough to sell a major project to management, the technology group decided.

We hoped the application area would allow the financial analysts to use the expert system to gauge the level of an organization's risk as determined by the analysis of exceptions to the FOCUS report. This risk-gauging procedure is known as exception disposition reporting (EDR). The analysts could then use the expert system to recommend what action should be taken, while providing an audit trail of action.

This application area satisfied our requirements: The EDR process was something our systems analyst understood, as he had worked on the CICS version of it, and the user community was constantly attacking the inconsistency of the EDR analysis process. Thus the application was seen as manageable, well understood and marketable to management.

When we had found a manageable application, the technology team set out to find a subtask of the application to turn into a working prototype within six weeks of start-up.

> WE HAD bitten off quite a chunk and had raised the expectations of users; now it was time for the technology team to deliver.

The six-week time period was important because this was a new technology to the user area, and we did not want to fund a research and development effort that would last a long time. Ever-increasing time frames diminish users' interest.

The subtask we chose was to identify and correct an exception associated with a securities concentration problem. This process entailed capturing the expertise involved in one major EDR as well as several associated EDRs.

We perceived that this limited subtask would fit nicely into the six-week time period and would provide a good incubator for experimentation.

In addition, the technical team had decided that it was necessary to demonstrate to management some of the more salient selling points of expert systems. By showing the system's ability to handle unknowns, contextual Help features, ranking capabilities (sometimes referred to as confidence factors) and ultimately the ease of use in expert systems, this subtask fit the bill in that way, too.

When the field was prepared and the players readied, we made a full frontal attack on management to garner support for the pilot project. They were intrigued by the intensity of the users' early enthusiasm, the possibilities of an automated solution to learning-curve inefficiencies and the potential of increased consistency among analysts.

Explaining costs involved

Their apparent support notwithstanding, we did, however, make sure that management understood the costs involved in building this prototype. Not only was computer response time a big open question — management feared the expert system would use too much computer time — but those users deemed experts needed to be pulled off the line for a while to draw together the rules of thumb and facts necessary to build an expert knowledge base.

But management approved prototype development, and it was time for the technology team to put its money where its very large technological mouth was. We had bitten off quite a chunk and had raised the expectations of users; now it was time to deliver.

At least six three-hour sessions were held with the user experts to elicit the knowledge-base rules. Analysis of case histories provided the format of these sessions. Between sessions, our two knowledge engineers spent considerable time in the user area observing the experts in action.

More than 100 rules were developed for the prototype, which ultimately consisted of only three out of several hundred possible EDRs.

After each rule-development session with the experts, we entered the rules learned that day into the shell so that the results of the session could be demonstrated to the experts at the next meeting.

STOCK BOSTON

On the floor *of the New York Stock Exchange*

The prototype demonstrated many, if not all, of the vagaries and intricacies of the ultimate problem we wished to solve. Because of this, we realized we needed a full tool set: frames to allow for a neat representation of grouped knowledge; certainty factors to allow for representing the user's "gut feelings;" recursion to allow the same code to be used more than once; both forward and backward chaining to permit an analyst to review and discover a problem and to seek out justifications and procedures for a given problem; truth maintenance to allow the user to back up and change his mind without restarting the session; and explain, Help and trace features.

In addition to the above characteristics, we wanted our shell to hook into existing file structures such as IBM mainframe databases DB2, IMS, SQL and IDMS as well as files such as VSAM and Ramis.

Six weeks after it was begun, the completed prototype was able to guide the financial analysts through the steps necessary to resolve 1 to N problem situations in priority order by designated severity level. The prototype demonstrated all that we had set out to do. We found that mainframe expert systems were practical and manageable from a capacity and resource perspective as long as the product was carefully and thoughtfully designed.

No cycle hog

Our prototype did not chew up computer cycles, and our resource extrapolation for the ultimate product was reassuring. We also discovered that a typical systems analyst can be turned into a successful knowledge engineer, given some training and tutoring.

From a user perspective, the prototype now generated enthusiasm at a fever pitch. The users finally had begun to understand the difference between paper processing and thought processing. They found much potential in expert systems and pushed strongly to make the prototype a production system.

Users saw the unique potential of the product from several vantage points. They saw it as an automated trainer for those new analysts on the job, as a quick reference guide for those more experienced on the job and as a means of ensuring consistency among users of the entire financial review system.

Management was invited to an on-line demonstration of the prototype by the technology group, but it was the users who sold the system. The demonstration was given by and for the user group. Instead of the techies gloating over technical tidbits, the user experts presented a tour de force that ultimately convinced management that this was a serious "toy" for the R&D staff.

Just right

Why was this prototype successful when so many others have failed? For starters, we tackled a well-proportioned problem — not too big and not too small, one that was understood enough by all those involved to be truly meaningful.

> AFTER EACH rule-development session with the experts, we entered the rules learned that day into the shell so that the results of the session could be demonstrated to the experts at the next meeting.

Second, the lead time between prototype inception and completion was only six weeks — just enough time to raise and satisfy expectations. Expertise was managed very resourcefully — we did not turn loose a data-bound analyst on the experts. We combined a seasoned knowledge engineer and trainer, the consultant, with an analyst familiar with the users' tasks.

Last, the users believed that this was their project. They lived it, and they sold it through their endorsement and enthusiasm.

Today, the prototype is still under development — it has a long way to go to be deployed in the financial department. But the users want it, andthe plan is to use and expand it to help them make some of their first-level decisions. •

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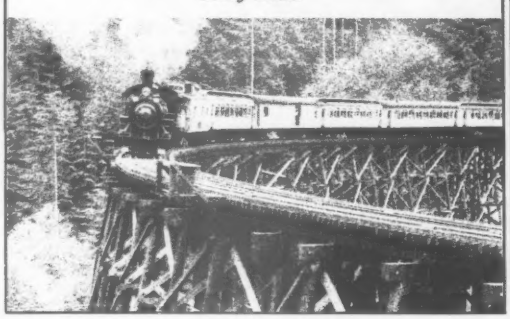

TAKING CHARGE

James Connolly

Sizing up technology

If anything can be considered age-old in a young field such as the 40-something-year-old electronic data processing business, it might be the question of whether to invest in an information technology project.

As John Diebold, chairman of The Diebold Group, Inc., notes, one aspect of that challenge — measuring the time value of information — was the topic of a speech he gave 23 years ago and is an area in which the business world has made little progress. He calls on the business community to come up with measures to show how an information system can free time for managers and other professionals or help them do work in new ways. Diebold makes his point in a recent white paper for his clients on how to measure the return on information technology investments.

What becomes clear as one reads the paper is that over-reliance on traditional accounting methods — such as return on investment — will hamstring a organization that wants to use information technology for competitive advantage. A strategic system will not pass a test in which the chief executive officer wants to see a clean analysis that shows enough increased sales to justify the systems investment.

Diebold notes that some of

Continued on page 67

Governing concern

Managers turn focus to control and expansion

BY JAMES CONNOLLY
CW STAFF

CLEVELAND — For all the challenges and problems associated with managing end-user computing and information centers, two common themes dominate all of the managers' actions: how quickly user computing should expand and what are the appropriate controls on such computing.

That was the key finding of two researchers who surveyed information center managers in 37 major U.S. and Canadian corporations. The results are sceduled to be published this week in the Cleveland-based Association for Systems Management's *Journal of Systems Management.*

The researchers noted that with most of an information center manager's actions being classified as expansion- or control-oriented, the manager can use a grid concept to rate the degree of expansion and control that is appropriate for his firm and then match his end-user computing strategy to the corporate plan.

"Success in managing end-user computing is contingent upon what the organization itself is trying to do. It depends on what the senior managers are trying to do. For example, if you have a senior manager whose dominant feature is going slow with a lot of controls, then you can plan your end-user computing with slow expansion and a high degree of control," said Sid L. Huff, an associate professor of MIS at the University of Western Ontario. Huff co-authored the research work with Malcolm C. Munro, professor of MIS at the University of Calgary.

Huff said that under a more dynamic corporate management, the information center should plan on a high degree of end-user computing expansion and controls. He noted that controls include not only restraints but also direction and guidance for users.

Data View

Information centers lose popularity

Many of the U.S. IBM and plug-compatible mainframe sites planning centers three years ago did install them, but the increase falls short of what was planned

SOURCE: COMPUTER INTELLIGENCE
CW CHART

Still tinkering, Block drawn to cutting edge

BY DOUGLAS BARNEY
CW STAFF

He may not be a whiz kid any longer, but Arthur Block is a leading-edge kind of guy.

While most of his contemporaries are buying personal computers with a megabyte or so of random-access memory, this Manufacturers Hanover Corp. vice-president in charge of end-user automation support is getting ready to buy machines with 8M bytes. While others are largely picking up Intel Corp. 8088 and 80286-based machines with a scant sprinkling of Intel 80386s, Block demands a good reason to buy anything less than an 80386.

And while most users stick to the tried-and-true character-mode interface for most applications, Block is already solidly in the Microsoft Corp. Windows graphical user interface camp.

Young tinkerer

Block's background provides more than a few clues as to why he picks up the latest and greatest and puts it to use. He is still very much the tinkerer who built electronic gadgets as a youth. Block, now 46, claims that as a 9-year-old boy growing up in The Bronx section of New York, his ambition was to become an electrical engineer.

As a science student in the early 1960s, Block was one of the few captivated by computers. He learned almost instantly. As a college junior, he taught the first computer course ever offered at the Stevens Institute of Technology. After that, there was no turning back. Electrical engineering was out, and programming was in.

At the time, mainframes were the only game in town, so that is what Block programmed. In fact, he got his first job at Manufacturers Hanover in 1975 as a project manager, working exclusively on mainframes. Later, as PCs hit the streets, Block was enthralled. As these computing devices began to seep into the company, he was there, fiddling, tinkering and managing. Eventually, the self-proclaimed PC agitator made a clean break from mainframe duties and pursued microcomputer implementation. It is this enthusiasm for technology that makes Block different. With enthusiasm has come understanding. "In the past, I have been technically superior to those I worked with and for. Now I have a boss that I have difficulty keeping up with technically," notes Peter T. Keilty, vice-

Continued on page 67

PROFILE

Arthur Block

Position: *Vice-president of end-user automation support at Manufacturers Hanover Corp.*
Mission: *To automate the work lives of account officers by providing sophisticated workstations for them.*

Firestone MIS exec faces tiring task

BY ALAN J. RYAN
CW STAFF

CHICAGO — As Firestone Tire & Rubber Co.'s new executive director of MIS, Robert L. Malizia faces many challenges, including guiding his MIS department through Firestone's recent acquisition by Bridgestone Corp.

Malizia, a 20-year veteran of the data processing industry, began his career at the Ford Motor Co. and most recently was manager of computer and communications services at Firestone in Akron, Ohio. He has also been employed by Navistar International Corp. and Reynolds and Reynolds Co.

"One of the things we're going to have to do is develop global systems to develop the two companies across Europe and the nation," Malizia said of Firestone and Bridgestone.

Over the next five years, he added, the two tire companies will continue to expand throughout the world marketplace, with MIS involved in most phases. "We need to be very flexible and able to build products anywhere in the world, ship anywhere in the world and react to pressures from changing tariffs and changing money values."

Culture mesh

An additional challenge lies in merging the diverse cultures of U.S.-based Firestone and Tokyo-based Bridgestone, according to Malizia. "I feel that we have some very exciting years ahead; these are exciting challenges," he said.

Currently, the Bridgestone and Firestone MIS departments are operating as separate entities, Malizia said. "We're in the planning stage with Bridgestone as to what kind of working relationship we're going to have with them long-range. Right now, we are working as equal vested partners."

Malizia holds both a bachelor's and a master's degree from Eastern Michigan University. At Firestone, he reports to the chief financial officer, Robert Anderson.

Firestone's Malizia

He replaces Laurance T. Burden, who has moved to S. C. Johnson & Son, Inc. in Racine, Wisc.

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MANAGEMENT BRIEFS

Common swept up in IBM mid-range fervor

This year certainly has been a hectic one — perhaps the most dynamic year ever — for users of IBM's mid-range systems. When IBM melded the System/36 and System/38 lines into the Application System/400 family, one result was a self-generating flood of questions for the users group **Common** to address.

Common reported a record-breaking attendance of 4,400 at its fall conference in Toronto. It elected officers as well, including new directors.

Robert A. Sutherland of Robert Sutherland Associates, Inc. in Assonet, Mass., was reelected president. The new board members elected to three-year terms are Merrikay Lee of Massoglia & Associates, Inc. in Lewisville, Texas, Roxanne Reynolds-Lair of The Fashion Institute in Los Angeles and Jeffrey Silden of Jeffrey J. Silden Software in Encino, Calif.

Jim Egan of Laclede Chain Manufacturing Co. in St. Louis was reelected to a three-year term; Gene Gellman of Cyro Industries in Sanford, Maine, was appointed to fill a one-year vacancy as director and treasurer.

The Department of Commerce recently presented its Gold Medal Award for distinguished contributions to the department's **Bureau of Export Administration Office of Information Resources Management** (IRM).

The IRM group was honored for improvements in its Export Control Automated System. These enhancements included a telecommunications link with exporters, a system providing licensing officers with access to 15 million records and a 32-station network supporting export licensing officers.

The bureau's IRM director, **John Young**, accepted the award on behalf of his staff, which includes Stephen Baker, Celeste Boswell, Michele Boone, Kevin Crowley, Jack Floyd, Mallory Green, Dennis Hackett, Tran Hoang, Gladys Jackson, Josef Klein, Alex Pena, Henry Gaston and Dale Barone.

The **Association for Systems Management** (ASM) has taken a look at the increasing variety in job functions and specialization on the part of its members and responded by launching a special-interest-group program. ASM is still considering the exact functional orientation of its first two groups of this kind.

The ASM also announced the sites of its 1991 and 1992 annual conferences. The 1991 conference is slated to be held in Las Vegas, the 1992 meeting in Montreal. The association had already scheduled the 1989 and 1990 meetings for Dallas and Atlanta, respectively.

The officers of six users groups that focus on **Honeywell Bull, Inc.** and **Groupe Bull** computers claimed success in the wake of their October meeting in Phoenix. The multigroup meeting was designed to help the varied segments explore areas of common interest. The groups established an international committee to facilitate the exchange of information and coordinate future shared activities.

His role in sponsoring legislation on computer crime and education recently earned **U.S. Rep. Bill Nelson** of Florida the **Data Processing Management Association's Information Processing Public Service Award.**

The award recognizes public officials who have taken a leadership role on issues impacting the information management profession.

Electronic Data Systems Corp. (EDS) has acquired the DP services businesses of two Texas banks' correspondent bank units.

EDS will pick up processing responsibilities for Texas Commerce Bancshares, Inc.'s 27 correspondent banks and Cullen/Frost Bankers, Inc.'s 54 correspondent banks.

Indiana University charts course

Business schools may be experienced at teaching students to plan a career in MIS, but general managers graduating from those schools seldom know more about computers than how to work with a spreadsheet or do a little programming according to research by an academician.

This is an oversight that Indiana University Professor E. Wainwright Martin hopes to address with a course that will be a requirement in the university's graduate business curriculum.

Drawing on interviews with managers from successful firms, Martin complained in a recent report that tomorrow's business leaders are not being trained in the management of information technology.

"Our goal was to develop a course on what the nonprofessional needs to know about computers to function successfully in a management career over a long period of time," he explains.

Martin says there are three categories in which students need education. The first is a basic vocabulary and knowledge of the technology so that they are not easily snowed by MIS managers. The second is knowing how to develop or acquire systems to solve specific problems. The third is an awareness of organizational issues relating to computers, such as where managers can get help, how much help they can expect and what types of politics are involved.

JAMES CONNOLLY

Connolly

FROM PAGE 65

the most successful corporate strategies have been based on a leap of faith or just the feeling that the company has to make a particular move.

Financial angle

But as another of the paper's authors, Diebold senior associate Chester Frankfeldt, adds, traditional accounting methods should play a role even in such situations. Frankfeldt makes the point that some type of financial analysis is necessary, if only to outline for management the best- and worst-case scenarios in terms of expenses and benefits. It puts the project, particularly the benefits, in perspective, he says.

The analysis has to look beyond things like hardware cost to factors such as whether the organization wants to treat software development as an expense or capitalize it, what the competition is doing with technology and the cost of lost business when a company does nothing.

The key to such an analysis, according to Diebold and Frankfeldt, lies in the string of buzzword phrases that have flooded the IS executive's brain in recent years: getting closer to the user, partnerships with the user, understanding the business strategy and so on.

The authors — acknowledging that much work remains to be done in the area of measuring benefits from technology — make a good point. The MIS executive who can focus attention on his or her peers in other functions and on the company's overall strategic plan will be positioned to justify a project that involves information technology. It will be a justification based not only on a numerical measurement but on a knowledge of what the project means as an integral part of the company.

Connolly is *Computerworld*'s senior editor, management.

Block

FROM PAGE 65

president in charge of the PC development group at Manufacturers Hanover. How does Keilty deal with this? "Lots of preparation."

Technology is more than just a job for Block. It is a big part of his life, say those that work with him. According to Keilty, Block takes products home for serious testing before they are used at the company. At least, that is one of the things he does when not installing security systems, building furniture or adding rooms to his New Jersey home.

Fortunately for Block, the company's senior management is pro-technology and willing to shell out the bucks to reap the benefits. "We had senior management at the bank that recognized that we really hadn't done much to automate our front offices or account offices," Block explains. This recognition started him on an automation path that has yet to end.

It began in 1986, when the firm's management funded a project called Infonet, which was designed to automate the desks of these account offices.

Naive users

The problem was how to do it. Block knew he would be computerizing a large group of naive users. He worried that they would be frustrated by the different user interfaces presented by the various PC software offerings. Things as basic as saving a file or printing were done differently based on the whims of the programs' authors.

"That was absolutely unacceptable," Block said. The answer was a graphical user interface such as that found in the Apple Computer, Inc. Macintosh or Windows. Although the Mac interface was more advanced than Windows, Block had a little problem with its proprietary architecture. "If Apple decided to go off in a different direction or decided to, God forbid, raise prices 30%, you were stuck," Block said, referring to Apple's decision earlier this year to boost prices across the board.

Manufacturers Hanover agreed with Block and standardized on Windows for its account officers, which has worked out just fine for Block. His programming team has transformed various Windows applications into a system specifically for the banking business.

On the menus, users see banking terms, not spreadsheet or word processing options. In fact, users have no idea they are actually using a spreadsheet or database package. Instead, they will see choices such as profitability and credit analysis.

This system comes at a cost, however. The system uses expensive 80386-based computers, high-resolution monitors and gobs of memory.

However, Block is automating the jobs of key and senior employees, whose time and decisions are valuable. "Account officers can put together a proposal in a day or two where it used to take a week to a week and a half," Block explains. And because all the PCs are tied to laser printers, the quality of the output is better than it used to be.

You ain't seen nothin' yet

Windows is the beginning. Even though most users plan to begin a migration to Microsoft and IBM's OS/2 Presentation Manager several years from now, Block will get started next summer. That is why Block is about to start buying his machines with 8M bytes of RAM.

Block is also using database technology that most others are just starting to talk about. While the industry is buzzing about a micro database future characterized by IBM's SQL and the so-called client/server architecture, Block has it in place. The account officers' workstations are tied to Gupta Technologies, Inc.'s SQLbase, which provides multiuser access to a common database.

Block's leading-edge mentality creates both challenges and risks, according to those who report to him. Often, he is deciding how to use technologies that are not even finished. "There is a dilemma of trying to work with unstable technology," said Rich Luciano, a vice-president who reports to Block.

Like Block, Luciano says he believes that using the latest and greatest pays off. "We will see it on the bottom line," Luciano says, pointing to improved methods of evaluating the bank's risk and exposure in investments and improvements in marketing to customers.

Not only do those reporting directly to Block believe in the pay-off; so, apparently, does the company's senior management, which continues to fund Block's high-end approach. And so, of course, does Block.

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INDUSTRY INSIGHT

Charles Varga

Get used to merger fever

Is the current merger mania in the computer industry part of the natural growth process? Or are we seeing the fat cats, investment bankers and carpetbaggers scoring a quick land-grab, riding the merger wave's momentum and the coattails of all those big-bucks megadeals that make the news?

Last year, in an attempt to vent my feelings through comic relief, I invented a ficticious merger-and-acquisition firm and started answering my telephone: "Pillage, plunder, plague, ravage and burn. Hun-Khan Partners: We sack 'em, you loot 'em." To my surprise, although many people thought it was funny, few really understood my point.

Be that as it may, users and vendors have resigned themselves to playing in an industry in which consolidation is the order of the day.

"Acquisitions and mergers are neither good nor bad; they are a fact of life," says Michael Jones, director of information systems at Knight-Ridder, Inc.

There are real concerns about the effects on acquired firms' clients and users. Bill Mann, vice-president of MIS at Wickes Co., says, "It's very

Continued on page 73

Honeywell Bull at a crossroads

Entity will get new name, new organization, new market focus for '89

BY NELL MARGOLIS
CW STAFF

BILLERICA, Mass. — Honeywell Bull, Inc. is about to get a new name, but it is not going to tell what it is until a formal announcement in early 1989. It is anybody's guess what it will be called after Honeywell, Inc. decreases its ownership of the company to less than 20% and bows out of the title at the end of this year.

But with major money committed to applications development, advertising and strong new product entries, Honeywell Bull executives said customers will be calling the company a contender.

When Honeywell merged its computer business with Japan's NEC Corp. and France's Groupe Bull to form Honeywell Bull in 1986, it reserved the option to decrease its ownership participation by the end of 1988. Neither the corporation nor its customers are unprepared for the change.

Raging Bull

"Basically, Bull has been running the show from the start," said Steven Milunovich, a large-systems industry analyst at First Boston Corp.

That is nothing but good news for users, said Roland Kelley, MIS director at Tewksbury, Mass.-based supermarket chain Demoulas Supermarkets, Inc.

"Groupe Bull is definitely more committed to the MIS community than Honeywell was," Kelley said.

Donald Bellomy, an analyst at Framingham, Mass.-based market research firm International Data Corp. (IDC), said the company's new incarnation represents more than a mere technicality.

"Lines of authority should be clearer," he said. Groupe Bull Chief Executive Officer Jacques Stern "will emerge as the real CEO, with [Honeywell Bull President and CEO] Roland Pampel more of a local caretaker," Bellomy predicted. "Certainly, the strategic direction will come much more from Paris than has been the case."

The Gallic flavor might not suit every palate, Bellomy warned. "Not only the presence of Bull, but the name Bull will be much more in evidence and, like it or not, there's a certain amount of xenophobia in the industry," he said.

Honeywell Bull expects the economic realities of the global economy to rule the minds of customers, whether current or potential, according to Marketing Communications Vice-President David Dotlich.

"Bull isn't a foreign company — it's an international company," Dotlich said. With revenue of approximately $6.6 billion, it is among the largest in the world.

The Bull connection should not threaten U.S. customers' patriotism, Dotlich said; it should help them hedge their bottom-line bets. "They're reassured that we're part of such a large, worldwide concern," he said.

The question likely to linger in users' minds after Jan. 1, Bellomy said, is, " 'Will the company make it?' And that's no new

Continued on page 72

Data View

Top 10 service providers of 1987

Although IBM leads in revenue, its percentage of revenue from service trails that of its competitors

	1987 worldwide service revenue in billions	Service revenue as a percentage of IS revenue
IBM	$9.36	18%
AT&T	$5.85	40%
Xerox	$3.31	31%
DEC	$3.14	33%
Unisys	$2.42	28%
NCR	$1.95	36%
Hewlett-Packard	$1.78	36%
Siemens	$1	18%
Wang	$0.89	29%
Eastman Kodak	$0.83	8%

SOURCE: THE LEDGEWAY GROUP, INC.
CW CHART

National Semi sells Datachecker division

BY J. A. SAVAGE
CW STAFF

SANTA CLARA, Calif. — National Semiconductor Corp., which is rumored to have its National Advanced Systems (NAS) mainframe business on the block, announced last week it is selling off another piece of its business, Datachecker Systems, Inc., to Great Britain's largest computer firm.

The new owner, ICL, is the mainframe and information systems subsidiary of London-based telecommunications giant STC PLC. ICL is the leading purveyor of retail point-of-sale (POS) systems in Europe, Australia and Japan, according to a company spokesman. The company began operations in the U.S. from a base in Stamford, Conn., two years ago.

Separately, National Semi reported a $25.2 million loss in the quarter ended Nov. 27 but said both Datachecker and NAS showed strong growth in the quarter. It blamed the loss on weak chip sales.

Datachecker will cost ICL

Continued on page 73

Young lions emerge in CDC; Unisys shuffles

BY CLINTON WILDER
CW STAFF

Unisys Corp. and Control Data Corp. both announced top management reshufflings last week that established some executives as potential heirs apparent and sent others packing their bags.

At CDC, Chairman and Chief Executive Officer Robert M. Price ceded his president's title to Lawrence Perlman, who engineered the dramatic turnaround of CDC's storage products business, one of the few bright spots in the Minneapolis-based company's inconsistent recovery efforts.

Perlman, 50, who headed CDC's former Commercial Credit Corp. subsidiary before moving to the storage business in 1985, was also named to the new position of chief operating officer.

One more step

Executive Vice-President John K. Buckner, 52, also took a step up the ladder to the new title of vice-chairman while retaining his post as chief financial officer.

Departing CDC as a result of the reshuffling was Thomas C. Roberts, president of computer systems and services. Perlman will be acting president of that unit and will also continue to head the Imprimis storage business until a successor is found.

Like 58-year-old Price, Unisys Chairman W. Michael Blumenthal yielded some of his responsibilities to newly promoted executives, a strong sign that they are in the running to someday replace the 62-year-old Blumenthal.

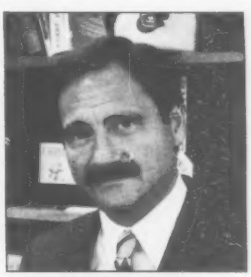
In moving from senior vice-president to executive vice-president, CFO Curtis A. Hessler will become responsible for Unisys' defense systems business, which formerly reported to Blumenthal. Hessler was also named to the board of directors and will head Unisys' financial and strategic planning.

Other apparent winners in the changes were Executive Vice-President James A. Unruh, whose duties expanded from heading international marketing to all commercial marketing, and Convergent, Inc. Chairman Paul C. Ely Jr., who was named to the Unisys board.

Ely will become a Unisys executive vice-president after expected shareholder approval this week of the acquisition of Convergent by Unisys.

Writing on the wall

Unisys also announced a significant departure — Senior Vice-President Jan Lindelow, the last remaining member of the former Sperry Corp. top management team at Unisys. Lindelow will pursue other unspecified interests. Many observers felt the writing was on the wall for former Sperry executives at Unisys one year ago when former Sperry CEO Joseph Kroger departed. He now heads Biin, the joint venture of Intel Corp. and Siemens AG.



CDC's Perlman

IN BRIEF

Apple's gain, IBM's loss

Apple Computer, Inc. has a new vice-president of U.S. customer services and information technology: Eighteen-year IBM veteran Morris Taradalsky, who, at his most recent post, was responsible for the development of the likes of Systems Application Architecture and IBM's computer-aided software engineering tools.

.....

The big dipper

Novell, Inc.'s increasingly vigorous pursuit of life as a software company is expected to show an unwelcome side effect this week when the Provo, Utah-based networking products company announces its fourth-quarter earnings. The expedited hardware products phaseout, according to an announcement made last week, led to an inventory write-down — which will cause an unspecified dip in net income.

.....

Tough times, but hanging in

A softening of the 380M-byte drive market and a lessened aftermarket demand for certain products has led to layoffs and altered production schedules at Longmont, Colo.-based data storage player **Miniscribe Corp.** Sales for 1988 will be affected, according to an announcement made earlier this month; however, they are still projected at an approximate 75% increase over last year's revenue figures.

.....

The name of the game

The name of the game in the computer industry continues to be consolidation.

Among last week's merger announcements was supermicrocomputer vendor **Alpha Microsystems**, which will use a subsidiary to acquire financially troubled **General Automation, Inc.**, whose principal product is the Zebra line of Pick Systems-based multiuser business systems.

Crossroads

FROM PAGE 71

question for Honeywell customers."

The answer is likely to center around three words: compatibility, applications and marketing, said Curt Beaumont, IDC's director of systems and peripherals. These were the focus of collective concerns expressed at the October annual meeting of worldwide MIS directors of one leading Honeywell Bull customer, General Electric Co., according to Beaumont.

Lean on me

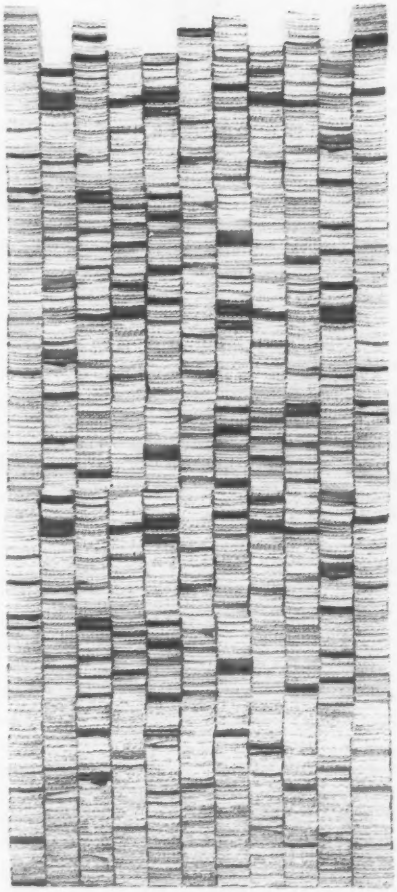
Noting an increasing leaning toward IBM among the GE MIS contingent, Beaumont said many of them think that Honeywell Bull has excellent on-line transaction processing (OLTP) capability — its recently unveiled Titan, or DPS 9000, is claimed as the fastest OLTP performer on the market — but is nevertheless unsure that the company will be able to serve its overall corporate needs in coming years.

Honeywell Bull has its own three words to allay such doubts, Dotlich said: "Just watch us!"

While he declined to spell out the strategy that is going into place as the company ends its two-year transition period, he outlined just what it is users should watch for in 1989.

"Heavy funding for new application development, both internal and through outside alliances, and a very aggressive advertising campaign," he said.

Theirs.



The second most reliable impact printer did this much before it stopped. It wound up in the repair shop after 7,000 hours or ten months of printing.

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PE12805

Varga

FROM PAGE 71

traumatic to have your large vendor acquired. All of a sudden you're dealing with someone you don't know. Are they going to support the product, in which you have invested a great deal of effort and money?"

Jim Moran, vice-president of corporate planning and development at H & R Block, concurs. "Some are good and some are bad," Moran says. "The bad ones are characterized by a great many layoffs, and I don't think they are good for the industry. The power ends up in fewer hands. On the other hand, venture capitalists and others need to cash out. In that respect, acquisitions have been good."

Good and bad mean different things to buyers and sellers, according to Haig Bazoian, the former president of Xerox Computer Services who now heads his own Beverly Hills-based consultancy, Haig M. Bazoian Co.

"For the acquirer, strategic fit added something to their business that gave them some edge over the competition," Bazoian says. "From the acquirees' point of view, they would gain investment monies or some sort of distribution for their product line or new markets."

For users, of course, concerns are different: Are the clients going to get better customer service? Are they getting a better product?

"These are the kind of comments I hear about Computer Associates these days," Bazoian says. "I think everybody's concerned that they are basically harvesting everything — they don't care about the customer. They are slowly pulling everything they can out; they are not really putting funds into good quality and high customer service. That's certainly the image. My sense is that in the next two years, Computer Associates will respond to these strategic weaknesses and look at them as opportunities."

Like birds and bees

Few industry figures have had more contact with merger and acquisition activity than Bob Weissman, chief executive officer of Dun & Bradsteet. D&B has completed more than 60 industry deals in the last five years, and Weissman also subscribes to the "they're a fact of life" philosophy.

"The acquisition and merger process is a natural adjunct to the process of the development of any fast-growing market," Weissman says. "Acquisitions and mergers are created by lots of entrepreneurial opportunities — the early failure of most of them, the development of the rest and then the process of consolidation. This helps develop a critical mass of skills and financial resources."

In terms of the process' impact on customers, Weissman notes, "It's kind of ethically neutral. There is nothing inherent in the act itself which leads to good or bad things."

Whether we like them or not, acquisitions and mergers are here to stay. They'll be with us until there are two firms left in the universe whose last gasp is, "Do you want to do a deal?"

And then there will be one firm left.

Varga, a 20-year computer industry veteran based in Frenchtown, N.J., is publisher of "The Cerberus Report," a study of industry mergers and acquisitions.

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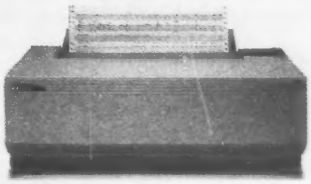

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HEWLETT PACKARD

National Semi

FROM PAGE 71

$90 million. It has an installed base worth $1 billion, according to the ICL spokesman.

National Semi has not earmarked the income for any particular project and would not say whether the sale will make it any easier for the firm to hang on to NAS. Apparently, the company was having difficulty getting Datachecker enough money to grow the business. Datachecker would only expand "if it was with an organization that was focused on the retail business," a spokeswoman said.

ICL would not comment on whether it will keep Datachecker headquarters in Santa Clara or on whether any layoffs are planned.

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President
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Mapping your future in GIS

Geographic information systems break new ground, gratify users

BY SHERYL KAY
SPECIAL TO CW

Ask a geographic information systems (GIS) specialist what an oil company, a paper manufacturer and a city government have in common, and he will probably talk about the need to integrate spatial and tabular data.

Technological developments and the demands of managing natural resources and public infrastructures have helped create the field of GIS, which now provides an exciting career option, in part because so many applications are just in the developmental stages.

GIS specialists tend to perform a variety of tasks, including interfacing with users to analyze their needs. The specialists use this analysis to create databases of information that correspond with automated mapping capabilities.

In the majority of large GIS shops, the programming is done with specialized software manufactured by industry vendors such as Intergraph Corp. in Huntsville, Ala., Environmental Systems Research Institute, a nonprofit organization in Redlands, Calif., and IBM. Coding is generally in Fortran.

GIS analyst Lisa Sparks knew she needed a change after spending several years developing IBM's IMS/Cobol business applications for General Dynamics Corp. and her current employer, San Diego Data Processing Corp. In 1984, the planning department where Sparks worked began to investigate GIS.

"I was in the right place at the right time," she says. "I was working on a permit system, and IMS/Cobol was getting pretty stale. There's only so much you can do there, while GIS is more like Star Wars."

User appreciation

In addition to technical challenges, Sparks now enjoys users' gratification. "The customers are so excited about this type of system, especially when they can see nice pictures," she says. "They can relate to it better, and it's very satisfying for me to watch them get what they've needed for so long."

Robert Bryant, a systems analyst at the Tennessee Valley Authority (TVA) in Norris, Tenn., notes that a GIS can run on a mainframe, mini or personal computer, so a professional is able to choose the most comfortable environment. Because GIS is an emerging technology, he says, "there are continually new developments and new releases, as well as an expanding recognition by professionals of the importance of the GIS specialist for resource management."

Along with the newness of the technology comes a shortage of experienced GIS programmer/analysts, so many employers have chosen to train people. Someone interested in career opportunities in GIS should have a good database background coupled with programming experience, preferably in Fortran, PL/I or C. Graphics knowledge is helpful, but since not all GIS applications are for mapping, it is not essential.

> "THIS IS what we call bleeding-edge technology. If you're interested in technology that is changing, GIS is it."
>
> LISA SPARKS
> SAN DIEGO DATA PROCESSING

Any experience or education in urban planning or land resource management is a tremendous plus. "In any discipline, there's a jargon and terminology that is unique to that profession," says Steve Smith, inventory systems manager at wood products company Potlach Corp. in Lewiston, Idaho. "Ours isn't any different, so there will be a fairly high learning curve for someone who hasn't had any exposure to related fields."

Someone from a business background may have a more difficult time than someone with cartography experience, for example, Smith says. He feels that if a professional has a broad-based education, good quantitative skills and superior communications skills, he should not exclude himself from looking at GIS, even if he has no land management experience.

Other GIS professionals agree that the technology and applications can be difficult to learn. "You have to acquire an understanding of the complexity and relationships of natural features that you find outside," the TVA's Bryant says. "Then you have to figure out how to get into the system, like how to technically manipulate a polygon within a polygon."

But the experts also say that learning GIS is worth the effort. "This is what we call bleeding-edge technology" Sparks says. "If you're interested in technology that is changing, GIS is it."

The few experienced GIS technicians seem to display a special brand of loyalty to their organizations, according to George Dix, project engineer at Gainesville Regional Utilities in Gainesville, Fla. "The GIS projects in the U.S. are in a sort of competition — who's going to get theirs up and sold to their users first, and who's going to have the best system," Dix says. "We are all trying to get to the gun and draw first."

Upward mobility

Dix also says GIS bolsters career potential with the range of benefits it offers user organizations. "The upward mobility of a candidate who's involved with the development of GIS is tremendous," he says. "Once all of the interfaces are developed, that person has had exposure to not only engineering and planning but to the whole realm of the operation, so you're talking about someone who's going to have a lot of experience under his belt."

Salaries vary for experienced GIS professionals, in part because many users are government agencies known for lower wages. National averages for GIS specialists with three years of experience range between $30,000 and $45,000 per year.

Such pay may not look like the rainbow leading to a pot of gold, but along the way, a GIS specialist might learn of another route to that goal.

Kay is a Tampa, Fla.-based business consultant and free-lance writer specializing in emerging technologies and human resources.

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TANDEM Prog/Anal's	30-36K
System 38 Prog/Anal's (RPG III)	29-36K
MAPICS Prog/Anal's (S/36 or S/38)	30-45K
IMS DB/DC Prog/Anal's	29-36K
DB2 SQL Prog/Anal's	30-40K
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MVS/XA Sys Prog's	35-45K
IMS or DB2 Data Base Anal's	45-55K

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Programmer-Analyst; 40 hrs/wk; 9 AM - 5 PM; $29,564/yr; overtime as needed, compensated at $15/hr. Job requires Masters degree in Computer Science. Job also requires 1) 1 grad course in which relational & hierarchical data bases were studied; & 2) 1 grad course in data structures. Job duties: under supervision of team leader, design, develop, test and implement computer systems for manufacturing applications for various client projects. Using relational, hierarchical, or network data bases, develop system to client specifications. Write COBOL applications in an IMS DB/DC environment using DB2 data base on an IBM mainframe. Qualified applicants should send resume and verification of reqs. to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref #73588. Employer paid ad.

Senior Computer Systems Analyst wanted to analyze complex systems requirements; design, develop and implement software applications systems for the distribution industry on a turn-key basis; supervise product development; project planning; scheduling; set-up project development methodology; design, review and systems development using UNISYS A-Series mainframe including B5000, B6000, B7000 series hardware; oversee analysis for software development of On-Line application systems using UNISYS software projects like DMS II, COMS, GEMCOS, COBOL 74, Compiler, SDF, WFL, and CANDE. Requires Master's degree in Computer Engineering or Computer Science and one year in job offered; $50,000.00 per year; 40 hours per week. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202 Ref #76088 "Emloyer Paid Ad"

Mirage Video Programmer. 40 hrs/wk. 8:00 a.m. - 5:00 p.m. $14.29/hr. Run computer programs on a mirage video system. Programs include geometric shapes in order to produce 3-dimensional effects. Perform numerical and semi-numerical analysis to optimize 3-dimensional graphic displays. Troubleshoot the system and repair circuitry and circuit boards to a component level. Bachelors of Science in Mathematics as well as two years experience as a mirage video programmer or as an electronic technician required. Two years prior experience must include the development and maintenance of electronic circuitry. Send resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 S. State Street - 3 South, Chicago, IL 60605 Attention: Marie Nimmen Reference #8733 AN EMPLOYER PAID AD.

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SANTA BARBARA COTTAGE HOSPITAL, a 600-bed acute care facility, has immediate opportunities for an IBM SYSTEM/38 PROGRAMMER/ANALYST. The installation is running BAXTER hospital software on two SYS/38's (Models 600 & 700) and is planning to migrate to the AS/400. The applicant must have at least 3 years experience programming in RPG III on a SYS/38. Health care and "PC" experience would be advantageous. Salary commensurate with experience. Choice benefits, superb working environment, unmatched geographic location and a commitment to state-of-the-art technology are offered. Applications will be accepted until 1/23/89. Please send resume and salary requirements to:

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The National Astronomy and Ionosphere Centre
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The Arecibo Observatory
for a
Senior Software Engineer

The Arecibo Observatory, site of the world's largest radio/radar telescope, invites applications for a senior staff position in the computer department. The Observatory uses a Harris H800 computer for real-time data acquisition and control, a Harris H1000 computer supplemented by a Sun-4/260 workstation and a VAX-11/750 for offline data analysis, and two Floating Point Systems Array Processors for signal processing. Typical projects will include design and enhancement of data acquisition systems based on state-of-the-art hardware, operating systems augmentation, design and development of scientific, graphic, and networking applications. Applicants should have 3-5 years' systems programming experience. A good knowledge of Unix and VAX/VMS is essential; experience with Harris VOS is desirable. The Arecibo Observatory supports pre-eminent research in the fields of radio astronomy, radar astronomy and atmospheric physics, and offers a challenging high-technology environment in a sunny Caribbean setting. Benefits include medical and life insurance, 18 days of vacation annually, and a comprehensive relocation package.

Include with your resume an example or description of work which best represents your abilities, and reply to:

A. Venkataraman
Computer Department Head
Arecibo Observatory
P.O. Box 995
Arecibo, Puerto Rico 00613
EOE/AA

A Milwaukee based company has an opening for an Electronic Systems Engineer. This is a 40 hour per week position with an annual salary of $36,850.00.

The individual hired will be responsible for performing system level design tradeoffs for military avionics computer based equipment. The individual will also be responsible for generation and translation of complete technical documentation in accordance with military standards required for all design activity. The individual will also be responsible for technical marketing activities as they relate to international marketing efforts of advanced avionic display systems.

Minimum requirements include a B.S. degree in Physics and Computer Science with at least five years experience. This position requires at least 5 year's of background in hardware and software system design. The candidate must analyze system level throughput for custom graphic processing engines utilizing GKS graphic instructions. The candidate must determine suitability of pressure transducer technology for air data measurements. The candidate must prepare hardware/software specifications for systems utilizing MIL-STD-1750 processor architecture and MIL-STD-1553 serial data bus. System software design requires two years experience in both Jovial and ADA high level languages as applied to specialized real-time military applications.

Reply to:
Milwaukee Job Service North
6067 North Teutonia Avenue
Milwaukee, Wisconsin 53209
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Attention: Roger Templer
Job Order No: 0380616

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Systems Analyst/Software Engineer (Danbury, CT). Analyze clients' needs. Design, develop and implement communication protocol software interfaces for data networks. Modify, enhance and support X.25/LAN communications coded in PL/M and ASSEMBLER, operating under UNIX and iRMX. BS Comp. Sci. or Elec. Engineering. 1 year doing above. 40 hr/wk. $38,000/yr. Resume to: RCG Resources, Inc., 111 West 40th St., 28th fl., NY, NY 10018. Attn: Bob Beaudet.

Senior Computer Software Engineer wanted to analyze complex financial and business systems requirements; design, develop and implement financial application systems and business application systems including State Government applications on UNISYS Large Systems (A15, B6900), B25 using DMS II, COBOL, ALGOL, COMS, Financial Accounting Package (GFS); develop systems on IBM PC/AT using Design/1 and Microfocus Work Bench; Requires Bachelor's degree in Computer Engineering or Mechanical Engineering and two years experience in job offered; $40,700.00 per year; 40 hours per week. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #76286 "Employer Paid Ad"

Systems Analyst (Tampa, Florida). Analyze user requirements. Design, develop, implement and maintain commercial applications systems. Utilize COBOL, RPG II & III, SEU, DFU and SDA software in IBM Systems 3 and 38 environments and Wordstar on IBM PC's. BS in Bus. Admin. 1 year experience doing above. 40 hr/wk. $32,000/yr. Resume to: RCG Resources, Inc., 111 West 40th St., 28th fl., NY, NY 10018. Attn: Bob Beaudet.

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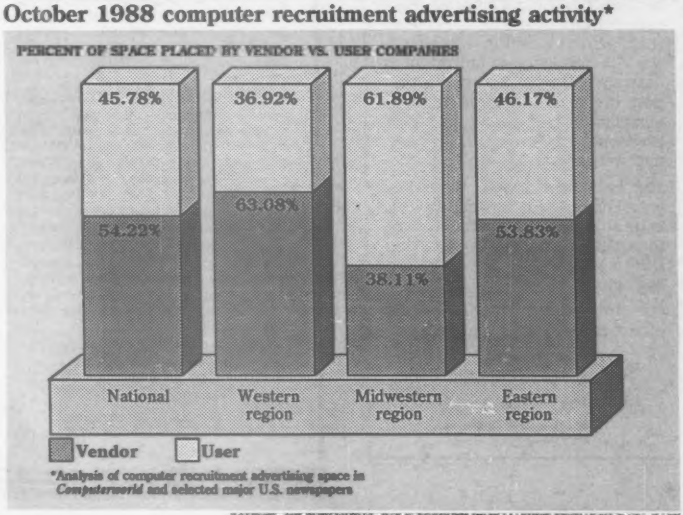
CAREER INDEX

October 1988 computer recruitment advertising activity*



*Analysis of computer recruitment advertising space in *Computerworld* and selected major U.S. newspapers

SOURCE: CW PUBLISHING, INC.'S RECRUITMENT MARKET RESEARCH DATA BASE

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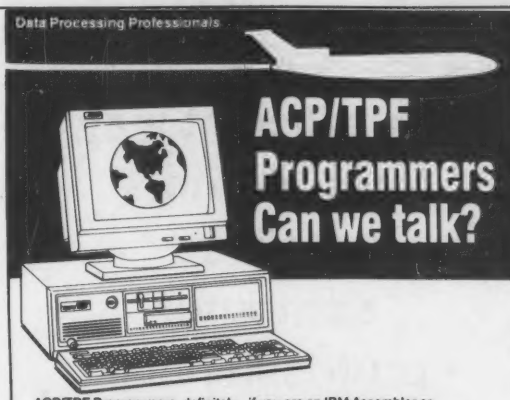
Programmer/Analyst (Manhattan). Analyze clients' problems. Design, develop, implement and maintain batch and on-line systems for financial applications. Utilize TSO/ISPF, CICS, VSAM, VM/CMS and MVS in an IBM mainframe environment. 1 year experience doing above. 40 hr/wk. $34,000/yr. Resume to: RCG Resources, Inc., 111 West 40th St., 28th fl., NY, NY 10018. Attn: Bob Beaudet.

Data Processing Professionals



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Systems Analyst/Software Engineer (New York Metro Area). Analyze users' needs. Design, develop and implement communication protocol software interfaces for communications systems. Design/Write device drivers. Install, enhance and support graphics workstations and X.25/LAN applications, coded in "C" and operating under UNIX. BS in Computer Science, Physics or Elec. Engineering. 2 yrs. experience doing above. 40 hr/wk. $40,000/yr. Resume to: RCG Resources, Inc., 111 West 40th St., 28th fl., NY, NY 10018. Attn: Bob Beaudet.

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ES Division, Att: AEC # 104228-J
Olympia, Washington 98504

JOB DESCRIPTION: Senior System Software Engineer, Operating Systems Group. Designs, implements, and tests complex and high level systems and software for microcomputers and processors. Assumes lead responsibility to test, debug, and evaluate OS/2 operating system software utilizing "C", 86 Assembler Series, and Fortran languages. Works with Original Equipment Manufacturers and with Independent Software Vendors to test and debug products prior to release. Assumes major project responsibility including: 1) requirements and analysis of project specifications; 2) product design; and 3) implementation schedules.

REQUIREMENTS: M.A. or M.S. in Mathematics, Computer Science, Engineering or Physics. Computer software design or programming: 6 months' employment experience utilizing "C", 86 Assembler Series and Fortran languages, MS-DOS or OS/2 operating system, and testing and debugging high- and low-level systems software.

SALARY: $36,000 per annum. 40 hours per week, flex time.

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5 columns x 7"	$3,920.00	$5,194.00	$6,174.00

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MARKETPLACE

Banner year for Europe's 4381s

Primary, secondary market activity slows in anticipation of replacement

BY KATE STURGESS
IDC FINANCIAL SERVICES CORP.

For IBM watchers, the fate of the 4381 market during 1988 should surely provoke discussion. With announcements of new models, withdrawals of the old and secondary effects from the IBM 3090 and 3081, 3083 and 3084 lines and, to a lesser extent, the Application System/400, this has been an action-packed year.

With the impending announcement of a replacement family, both primary and secondary markets for 4381 equipment have stalled. What little activity there is in the 4381 market is currently concentrated at the top end — 4381 Model 13s, 14s, 23s and 24s — where users are upgrading capacity and, in some cases, installing a second processor to push up their overall capacity.

This inactivity is a clear indication that large 4381 users are keeping their options open. They are well aware that a 4381 replacement is just around the corner and would prefer to see the offering before committing to the water-cooled mainframe environment.

High-end value stable

Values for these larger 4381 boxes have remained stable, with only gradual declines over recent months, which contrasts sharply with the rapid declines in prices seen in the first half of this year. For example, the current fair market value of the 4381 Model P14 was about 55% of retail, or $454,000, in February (all values based on the West German exchange rate on Dec. 5). By June, the secondary market price had declined to 44% of retail, or $363,000, a 20% drop over a period of five months.

Since June, however, the rate of decline has slowed such that by this month, the P14 was commanding a retail value of about $31,000, or 38% of the West German list price. This reduced rate of decline in value reflects the increased demand for larger 4381 boxes since midyear.

Popularity of the smaller models, in particular the 4381 Model 2s, 12s and, to a lesser extent, 13s, led to stable pricing well into the second quarter. This stability was mainly due to the attractive performance size and upgrade options available at the time, but was also attributable to the general market expectation that IBM would shortly reduce the upgrade options of the older 4381 series. Indeed, on June 15, IBM duly withdrew from marketing upgrades of Models 11, 12, 13 and 14. This left only upgrades to the Models 21, 22, 23 and 24 available.

> WHILE 4381 top-end values have firmed somewhat, prices for these smaller models have been experiencing increasing rates of decline.

While top-end values have firmed somewhat, prices for these smaller models have been experiencing increasing rates of decline. Values for the Models 2 and 12 are converging, reflecting their equivalent performance ratings, but ignoring to some extent their relative ages. They are currently trading at around $61,000 and $84,000, respectively, which indicates a premium of about $23,000 for the Model 12, and this is declining.

Both the Models 1 and 11 are very rarely seen. As base boxes within their respective 4381 model groups, most have already been upgraded.

Users who have exhausted the growth potential for their 4381 installations and have not been able to wait for the so-called 4391 have in some cases moved to the IBM 3090 series, in which Model 150s were trading on the secondary market in October for around $108,000 per million instructions per second (MIPS).

Another mainframe calls

Some users moved into the 3081, 3083 and 3084 environment, in which, for example, a 3083 Model JX2 was attracting about $159,000 and offering 8 MIPS, while a Model KX was going for $367,000 with 15.1 MIPS. While moving into the 3081, 3083 or 3084 environment may appear to be a step backward, it allows the 4381 user to convert to the water-cooled mainframe environment very cheaply while they wait for 3090 secondary market values to fall within reach. Although some displacement has occurred, there are considerable complications associated with the switch to the water-cooling method; this is not a common practice.

Typical of previous years has been a flurry of activity in the fourth quarter, as data processing managers try to fulfill their budgets. So far, there has been no evidence of this in the fourth quarter of 1988, and trading of DP equipment in general remains quiet.

The stall in secondary market activity will continue until the follow-on product debuts in 1989. IBM must be feeling this dearth of activity in the primary market also, so it is expected to attempt to announce and ship the 4391 in the shortest time frame possible.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at 508-872-8200.

The BoCoEx index on used computers

Closing prices report for the week ending Dec. 9, 1988

	Closing price	Recent high	Recent low
IBM PC Model 076	$700	$900	$400
XT Model 086	$1,125	$1,250	$900
XT Model 089	$1,350	$1,575	$1,050
AT Model 099	$2,050	$2,400	$1,700
AT Model 239	$2,300	$2,900	$1,800
AT Model 339	$2,350	$3,600	$2,425
PS/2 Model 30	$1,650	$1,700	$1,300
PS/2 Model 50	$2,400	$2,600	$1,900
Compaq Portable I	$725	$975	$650
Portable II	$1,850	$2,000	$1,650
Portable III	$2,500	$3,550	$2,500
Portable 286	$1,750	$2,400	$1,675
Plus	$1,100	$1,250	$800
Deskpro 20-MHz	$1,200	$1,500	$800
Deskpro 286	$2,375	$3,150	$1,800
Deskpro 386	$4,325	$5,100	$4,100
Apple Macintosh 512	$700	$950	$550
512E	$900	$1,025	$600
Plus	$1,150	$1,325	$950
Plus 20-MHz	$1,525	$1,650	$1,275
SE	$2,000	$1,950	$1,700
SE 20-MHz	$2,525	$2,675	$1,800
II	$3,800	$4,000	$3,550
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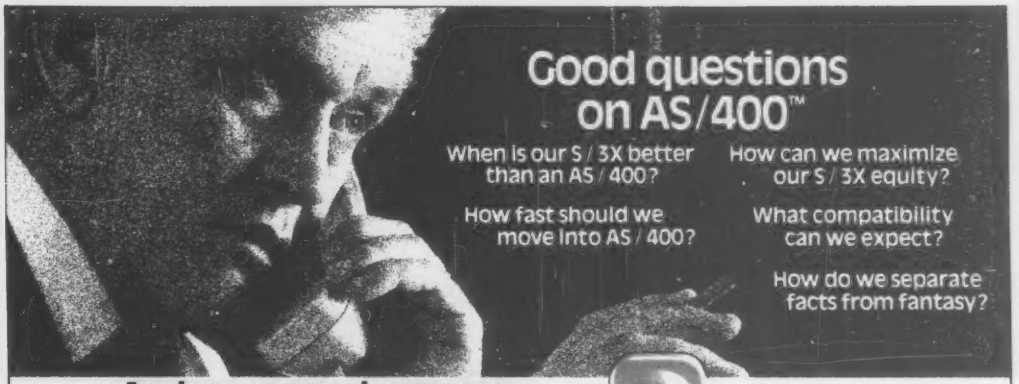

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TRAINING

Creating a learning atmosphere

Make training relevant, put nervous novices at ease and lighten up a bit

BY NAOMI KARTEN
SPECIAL TO CW

Effective classroom learning requires only two ingredients: good material and a good instructor. True?

Not by a long shot, because training is not the same thing as learning. A trainer may do the best possible job, but if students do not learn, then the training must be considered a failure.

Numerous factors can keep people from learning in a class — things such as a stuffy room, material presented in a monotone, equipment that refuses to cooperate and distractions such as the snoring in the back of the room.

It is not always easy to provide training that is conducive to learning, but the following techniques provide some steps in the right direction.

Relate the material to jobs. Systems professionals tend to be relatively quick in picking up new technical material. Even novice personal computer users do not remain novices for long. But one of the greatest gaps in training for both data processors and end users is between product mechanics and the application of the product to business needs.

To minimize this gap, prepare exercises that simulate actual use. Not every exercise must have a serious business orientation. One trainer, for example, developed a dating service database. "You should see how fast they learned to do database queries," she reported afterward.

But don't forget to relate the process to on-the-job uses. In doing so, it may help to orient training around specific business needs. Have students work on real business problems during class. Computer learning is easily forgotten in the best of cases. The closer training is to on-the-job use, the more likely students are to retain the material afterward.

Do not assume that students see the relevance of a particular technique or product capability. Tell them — and do not be surprised to hear a few "Ahas" from the crowd.

Make students feel good about themselves. When you are in the training business, you are also at least partly in the psychology business. If people feel they are capable of making progress, they are more likely to do so than if they feel they are in over their heads.

To avoid causing this feeling, provide students with frequent opportunities for success. Adults are no different from children in needing reassurance that they are on the right track. Hands-on exercises designed so that students have a reasonable probability of successfully completing them can go a long way in providing this reassurance.

Even in a class of first-time users, it is easy to devise simple exercises that let students feel a sense of mastery. In fact, providing these exercises at regular intervals is especially important with nervous novices.

Make a point of respecting students as intelligent adults. They may be nervous about learning new material and may make mistakes that contribute to after-hours amusement among trainers. But they are individuals with proficiencies both in and outside computing and should be respected as such. Problems with students who "just don't get it" in spite of the instructor's best efforts should be dealt with privately, away from the classroom.

Empathize with students' fears, too. Many people, even those with extensive technical experience, approach a technical class with fears. This situation is particularly likely for those learning a new way of computing, such as veteran Cobol programmers who attend their first fourth-generation language class.

> ONE OF THE hardest things for experienced trainers is to remember what it was like not to know. Trainers should do their best to hang on to these memories.

One of the hardest things for experienced trainers is to remember what it was like not to know. Trainers should do their best to hang on to these memories. The instructor who can remember what it was like can make students feel less uncomfortable about their insecurities.

Avoid projecting arrogance. Students already know that you know more than they do. There is no need to hold it over their heads.

Make training enjoyable. Everyone can recall classes that were deadly dull, in which time just slowed to a standstill. But just because the material is serious does not mean the class has to be. Students who actively enjoy a class will retain the material longer than students whose toothpicks just barely prop their eyelids open. If you look like you are having a good time, students also are more likely to do so.

Use gimmicks, signs and cartoons to help you make your point in an amusing manner. A few magic tricks can give any class a boost. Some trainers maintain a kit of props that they draw from for their various classes.

Another technique is to describe your own experiences. Students enjoy war stories, and no instructor is without his fair share. Talking about your own goofs, snafus and outright disasters makes the material more real and down-to-earth for students.

Consider being a little outrageous. Do not be too tied to the conventional way of doing things. If imitating a tree will help you make a point about subdirectories, try it. Just use common sense; you may not want to wear a clown suit to deliver an executive training seminar. Then again, perhaps you should not automatically rule it out — it just may help get a point across.

Karten is president of Karten Associates in Randolph, Mass.

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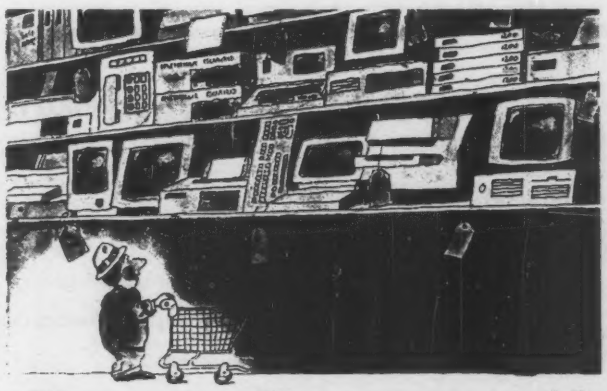

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Dec. 5	LAN's	Nov. 18
Dec. 19	IBM-Compatible PCs/PS2 Market Products/Monitors	Dec. 2

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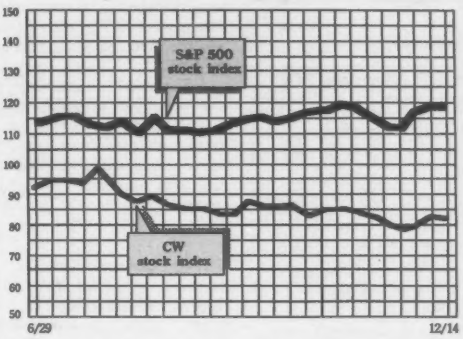

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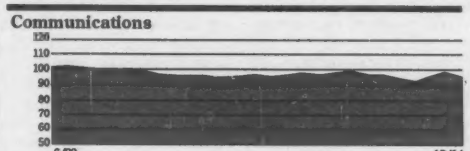
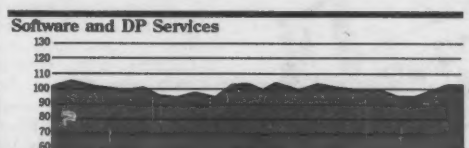
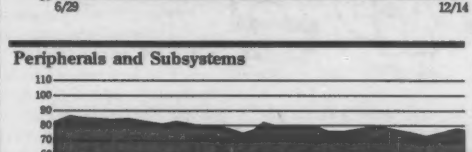
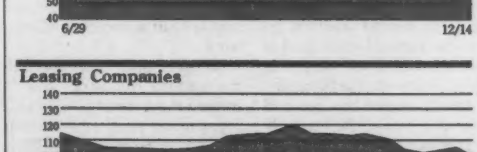
Communications	98.0	95.3
Computer Systems	95.5	93.2
Software & DP Services	103.9	102.8
Semiconductors	54.0	54.0
Peripherals & Subsystems	78.8	77.3
Leasing Companies	105.2	99.9
Composite Index	82.9	81.1
S&P 500 Index	117.4	116.2









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CLOSING PRICES WEDNESDAY, DEC. 14, 1988

EXCH

		52-WEEK RANGE (1)		CLOSE DEC. 14 1988	WEEK NET CHNGE	WEEK PCT CHNGE
Communications and Network Services						
N	AMERICAN INFO TECHS CORP	97	82	94.625	-0.4	-0.4
Q	ANDREW CORP	19	12	18.75	0.3	1.4
Q	ARTEL COMM CORP	3	1	1.5	0.0	0.0
N	AT&T	30	24	29.25	-0.5	-1.7
Q	AVANT GARDE COMP INC	3	0	0.375	-0.1	-25.0
Q	AVANTEK INC	9	4	4.25	-0.1	-2.9
N	AYDIN CORP	26	18	21.5	0.0	0.0
N	BELL ATLANTIC CORP	75	62	72.75	0.1	0.2
N	BELLSOUTH CORP	44	35	40.25	0.0	0.0
Q	COMPRESSION LABS INC	5	3	3.125	0.0	0.0
Q	COMPUTER NETWORK TECH	2	1	1.282	-0.1	-8.9
Q	CONTEL CORP	39	27	38.375	0.5	1.3
Q	DATA SWITCH CORP	10	5	5.25	-0.1	-2.3
Q	DIGITAL COMM ASSOC	38	17	17.125	-0.5	-2.8
Q	DYNATECH CORP	24	17	17.5	0.0	0.0
Q	FIBRONICS INTERNATIONAL INC	5	2	3.875	-0.3	-6.1
Q	GANDALF TECHNOLOGIES	8	5	4.875	-0.5	-9.3
Q	GENERAL DATACOMM INDS	5	3	3.625	-0.1	-3.3
N	GTE CORP	46	34	44.75	-0.6	-1.4
Q	INFOTRON SYS CORP	14	5	10.25	-0.3	-2.4
N	ITT CORP	56	43	50.875	-1.4	-2.6
N	M A COM INC	11	8	7.875	-0.4	-4.5
Q	MCI COMMUNICATIONS CORP	25	9	22.25	-1.3	-5.3
Q	NETWORK EQUIPMENT TECH INC	23	14	15.75	-0.5	-3.1
Q	NETWORK S/S CORP	12	7	9.875	0.0	0.0
N	NORTHERN TELECOM LTD	20	16	15.875	-0.6	-3.8
Q	NOVELL INC	33	18	30	-2.1	-6.6
N	NYNEX CORP	71	61	67.375	0.5	0.7
N	PACIFIC TELESIS GROUP	32	25	31.5	0.6	2.0
N	PARADYNE CORP	6	4	4.875	-0.4	-7.1
A	PENRIL CORP	5	2	4	0.0	0.0
N	PLESSEY PLC	41	25	38.75	-0.5	-1.3
N	SCIENTIFIC ATLANTA INC	16	10	13.125	0.5	4.0
N	SOUTHWESTERN BELL CORP	43	33	41.375	-0.4	-0.9
Q	3 COM CORP	24	16	21.375	-1.4	-6.0
N	U S WEST INC	60	49	58.5	-0.4	-0.6
Computer Systems						
Q	ALLIANT COMPUTER SYS	9	3	4.125	-0.3	-5.7
Q	ALPHA MICROSYSTEMS	8	3	5.75	-0.4	-6.1
Q	ALTOS COMPUTER SYS	13	7	8.125	0.4	4.8
A	AMDAHL CORP	28	14	18.625	-0.4	-2.0
Q	APOLLO COMPUTER INC	17	7	7.25	-0.5	-6.5
Q	APPLE COMPUTER INC	48	36	39.75	0.4	1.0
N	BOLT BERANEK & NEWMAN	19	11	10.875	-0.5	-4.4
Q	BRITTON LEE INC	3	1	2.313	0.2	8.8
N	COMPAQ COMPUTER CORP	66	42	56.5	-0.9	-1.5
Q	COMPUTER AUTOMATION INC	14	3	6.75	0.3	3.8
A	COMPUTER CONSOLES INC	13	3	12.5	0.1	1.0
Q	CONCURRENT COMP CORP	7	4	4.375	0.0	0.0
N	CONTROL DATA CORP	31	16	18.5	0.8	4.2
Q	CONVERGENT TECH	7	3	6.875	0.0	0.0
Q	CONVEX COMPUTER CORP	11	6	9.5	-0.1	-1.3
N	CRAY RESH INC	89	53	53.625	-3.6	-6.3
Q	DAISY SYS CORP	12	6	6.125	-0.4	-5.8
N	DATA GEN CORP	28	17	17.875	-0.4	-2.1
N	DATAPOINT CORP	6	4	4	-0.1	-3.0
Q	DELL COMPUTER CORP	13	7	10.5	-1.4	-11.6
N	DIGITAL EQUIP CORP	145	86	92.125	-3.5	-3.7
N	FLOATING POINT SYS INC	5	2	2.5	-0.1	-4.8
N	HARRIS CORP	33	24	27.25	-0.3	-0.9
N	HEWLETT PACKARD CO	68	44	51	-0.5	-1.0
N	HONEYWELL INC	77	53	58.875	-0.9	-1.5
N	IBM	130	104	120.5	-0.5	-0.4
Q	INFORMATION INTL INC	16	10	14	0.0	0.0
Q	IPL SYS INC	5	1	4.375	-0.3	-5.4
N	MAI BASIC FOUR INC	21	8	8.25	-0.8	-8.0
N	MATSUSHITA ELEC INDL LTD	230	162	200	3.9	2.0
Q	MEGADATA CORP	4	1	1.5	-0.1	-7.7
Q	MENTOR GRAPHICS CORP	37	19	28.375	0.1	0.4
N	NBI INC	7	2	2	-0.1	-5.9
N	NCR CORP	70	51	53.375	-2.0	-3.6
N	PRIME COMPUTER INC	19	12	16.5	-1.0	-5.7
Q	PYRAMID TECHNOLOGY	17	7	15.5	-0.5	-3.1
Q	SILICON GRAPHICS CORP	25	14	16.75	0.0	0.0
Q	STRATUS COMPUTER	32	20	24.75	-0.3	-1.0
Q	SUN MICROSYSTEM INC	41	26	31.5	0.4	1.2
Q	SYMBOLICS INC	2	1	1.063	-0.1	-5.5
Q	SEQUENT COMPUTER SYS INC	19	12	17.625	-1.3	-6.6
N	TANDEM COMPUTERS INC	30	12	16.75	0.1	0.8
N	TANDY CORP	49	31	40.75	-0.1	-0.3
N	ULTIMATE CORP	22	9	9.5	-0.6	-6.2
N	UNISYS CORP	39	25	27.875	-1.4	-4.7
A	WANG LABS INC	17	8	8	-0.8	-8.6
Software & DP Services						
Q	ADVANCED COMP TECH	3	1	1.688	-0.3	-15.9
Q	AMERICAN MGMT SYS INC	19	11	15.625	0.1	0.8
Q	AMERICAN SOFTWARE INC	17	8	15.5	0.0	0.0
N	ANACOMP INC	12	6	8.125	-0.1	-1.5
Q	ANALYSTS INTL CORP	11	6	11	0.9	8.6
Q	ASHTON TATE	31	19	21.5	-1.3	-5.5
Q	ASK COMPUTER SYS INC	16	7	14	-0.6	-4.3
Q	AUTODESK INC	31	16	27	-0.5	-1.8
N	AUTO DATA PROCESSING	47	35	39.5	0.5	1.3
Q	BMC SOFTWARE INC	12	8	12.025	2.3	23.3
Q	BOOLE & BABBAGE INC	10	7	9.75	0.1	1.3
N	BUSINESSLAND INC	15	8	13.625	-0.5	-3.5
N	COMPUTER ASSOC INTL INC	33	24	29.625	-0.1	-0.4
Q	COMPUTER HORIZONS CORP	12	7	8.5	0.3	3.0
N	COMPUTER SCIENCES CORP	56	38	48.25	-1.3	-2.6
Q	CORPORATE SOFTWARE	15	7	10	0.5	5.3
N	COMPUTER TASK GROUP INC	17	9	14.75	0.3	1.7
Q	COGNOS INC	8	4	6.625	-0.6	-8.6
Q	COMSHARE INC	25	13	20.25	-1.0	-4.7
N	CULLINET SOFTWARE INC	9	4	6.125	0.0	0.0
Q	DUQUESNE SYS INC	22	18	20.375	0.4	1.9
N	GENERAL MTRS (CLS E)	45	34	42	0.3	0.6
Q	HOGAN SYS INC	6	3	4.25	-0.1	-2.9
Q	INFORMIX CORP	26	7	8.125	-0.5	-5.8
Q	INTELLICORP INC	4	2	3.25	-0.1	-3.7
Q	KEANE INC	16	8	14.625	0.6	4.5
Q	LOTUS DEV CORP	34	15	17.75	0.0	0.0
Q	MANAGEMENT SCI AMER	14	6	7	-0.4	-5.1
Q	MICRO PRO INTL CORP	4	2	2.188	-0.3	-10.3
Q	MICROSOFT CORP	71	45	48.375	-0.9	-1.8
Q	PEERING ASSOCIATES INC	20	12	18	0.5	2.9
Q	NATIONAL DATA CORP	32	19	22.125	-0.5	-2.2
Q	ON LINE SOFTWARE INTL INC	14	4	5.625	0.0	0.0
Q	ORACLE SYS CORP	22	11	18	-1.0	-5.3
N	PANSOPHIC SYS INC	19	12	12.75	-0.1	-1.0
Q	PHOENIX TECHNOLOGIES INC	18	12	12.25	-1.0	-7.5
Q	POLICY MGMT SYS CORP	26	18	24.375	-1.1	-4.4
Q	PROGRAMMING & SYS INC	17	8	16.5	0.3	1.5
Q	RABBIT SOFTWARE INC	3	2	2.75	-0.1	-4.3
Q	RELATIONAL TECHNOLOGY INC	21	12	14.125	-0.6	-4.2
Q	REYNOLDS & REYNOLDS CO	24	14	22.625	-0.4	-1.6
Q	SEI CORP	22	14	17.375	0.1	0.7
Q	SHARED MED SYS CORP	27	14	17	-0.3	-1.4
Q	SAGE SOFTWARE INC	8	5	7.75	0.4	5.1
Q	SOFTWARE PUBG CORP	27	7	19.625	-1.6	-7.6
A	STERLING SOFTWARE INC	9	5	5.5	-0.3	-4.3
Q	SUNGARD DATA SYS INC	20	11	15.5	0.0	0.0
Q	SYSTEMATICS INC	34	24	29.875	0.1	0.4
N	SYS. SOFT INC	26	11	25.75	0.9	3.5
Q	VM SOFTWARE INC	18	7	17.25	0.6	3.8
Semiconductors						
N	ADV MICRO DEVICES INC	17	7	7.5	0.0	0.0
N	ANALOG DEVICES INC	16	10	11.5	0.3	2.2
Q	ANALOGIC CORP	9	5	8.25	0.4	4.8
Q	CHIPS & TECHNOLOGIES INC	21	11	11.625	0.1	1.1
Q	INTEL CORP	37	19	21.375	0.1	0.6
Q	LSI LOGIC CORP	14	7	9.125	-0.4	-3.9
Q	MICRON TECHNOLOGY INC	26	12	14.875	-0.5	-3.3
N	MOTOROLA INC	55	36	39.75	-0.5	-1.2
N	NATL SEMICONDUCTOR	15	8	9.125	0.3	2.8
N	TEXAS INSTRS INC	60	35	37.625	-0.5	-1.3
A	WESTERN DIGITAL CORP	18	11	12.625	0.0	0.0
Peripherals						
Q	ALLOY COMP	6	2	2.875	0.0	0.0
N	AMI INTL INC	6	3	4.875	0.1	2.6
Q	AST RESH INC	17	7	7.75	-0.4	-4.6
Q	AUTO TROL TECH CORP	6	3	4.75	-0.1	-2.6
Q	BANCTEC INC	12	6	9.75	0.1	1.3
Q	CIPHER DATA PRODS INC	10	6	9.125	-0.4	-3.9
A	COGNITRONICS CORP	4	2	2.375	-0.1	-5.0
Q	CONNOR PERIPHERALS	10	7	7	-0.4	-5.1
A	DATAPRODUCTS CORP	13	8	12.25	0.5	4.3
A	DATARAM CORP	9	6	6.875	-0.4	-5.2
N	EASTMAN KODAK CO	53	39	45.25	-1.0	-2.2
Q	E M C CORP MASS	19	4	4.25	0.0	0.0
Q	EMULEX CORP	11	5	11	0.3	2.3
Q	EVANS & SUTHERLAND	25	13	16.25	0.3	1.6
Q	ICOT CORP	5	2	2.625	-0.3	-8.7
Q	INTERLEAF INC	21	6	8.25	0.5	6.5
Q	IOMEGA CORP	5	1	3.375	-0.1	-3.6
Q	LEE DATA CORP	4	3	3.125	0.0	0.0
Q	MASSTOR SYS CORP	3	2	2.813	0.1	2.3
Q	MAXTOR CORP	16	6	7.75	-0.1	-1.6
Q	MICROPOLIS CORP	30	6	6.875	-1.1	-14.1
Q	MINISCRIBE CORP	14	6	7.125	-1.3	-14.9
N	MINNESOTA MNG & MFG CO	68	55	62.25	-0.1	-0.2
Q	PERSONAL COMPUTER PRODUCTS INC	7	4	4.875	-0.1	-1.3
Q	PRIAM CORP	3	1	1.438	0.2	15.0
Q	PRINTRONIX INC	11	7	8.25	0.3	3.1
N	QMS INC	15	6	7.125	-0.6	-8.1
Q	QUANTUM CORP	14	10	12.5	-0.9	-6.5
N	RECOGNITION EQUIP INC	12	6	10.125	-0.4	-3.6
Q	REXON INC	9	4	7	-0.1	-1.8
Q	SEAGATE TECHNOLOGY	23	7	7.375	-0.5	-6.3
N	STORAGE TECH CORP	4	1	1.625	-0.1	-7.1
Q	TANDON CORP	3	1	1.063	0.0	0.0
A	TEC INC	6	2	2.875	0.4	15.0
N	TEKTRONIX INC	30	19	19.375	-1.0	-4.9
Q	TELEVIDEO SYS INC	2	0	0.375	-0.1	-14.4
N	XEROX CORP	63	50	57.25	-0.1	-0.2
Leasing Companies						
Q	AMPLICON INC	18	8	16.125	0.4	2.4
N	CAPITAL ASSOCIATES INTERNATIONAL INC	7	4	5.5	-0.3	-4.3
N	COMDISCO INC	25	16	20.25	-1.1	-5.3
Q	CONTINENTAL INFO SYS	9	2	2	-0.4	-15.8
Q	LDI CORPORATION	14	9	13	0.0	0.0
Q	PHOENIX AMERN INC	4	2	3.125	0.0	0.0
Q	SELECTERM INC	6	3	4.75	-0.3	-5.0

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Battery charge

Stocks take a beating but make recovery for the holidays

Technology stocks, more battered than battered of late, were showing signs of resurgence last week — is this the holiday spirit, or what?

Novell, Inc. dropped a point to 29¼ after warning that a hardware inventory write-down caused by a strategic shift toward software would depress fourth-quarter earnings. By Thursday, however, it picked up ⅞ of a point to close at 30⅛.

Glad tidings rang out from the semiconductor sector. Micron Technology, Inc. reported first-quarter sales up more than 100% over last year but down from fourth-quarter revenue because the company could not turn out dynamic random-access memory chips fast enough to fill the ever-escalating demand. Its stock closed up ⅝ of a point Thursday, finishing at 15⅝. Intel Corp. picked up ⅜ of a point to close at 22⅜; LSI Logic Corp. ended the week at 9¼, up ⅛; and VLSI Technology, Inc. gained ⅜ of a point, ending the week at 8¼.

Elsewhere in the industry, IBM closed Thursday at 121, up ⅝ of a point. Digital Equipment Corp. fell 1¾ points to a Thursday close of 92.

NELL MARGOLIS

Top telecom jobs changed by breakup

BY ELISABETH HORWITT
CW STAFF

The divestiture of AT&T has made communications managers' lives "roughly analogous to parents of schizophrenic children," the leader of a business telecommunications group says.

"The up side is that some very creative things can be done; the downside of that is that [their jobs] have become extremely complex," said Kenneth Phillips, chairman of the Committee of Corporate Telecom Users and a vice-president of telecommunications policy at Citicorp.

During the last five years, communications managers have had to become savvy, flexible and aggressive to chart a successful course in volatile postdivestiture waters.

Among the influences that companies must now take into account when hammering out network strategy are "the dynamics and subtleties" of tax policy, depreciation and capital recovery as well as volatile regulatory and political environments, Phillips said.

Computerworld asked several communications managers how divestiture has affected their jobs and their companies' communications strategies. The issues and concerns they talked about fall into three broad areas: relationships with carriers; the regulatory environment; and the communications marketplace.

An increasing number of companies find their communications strategies have come full circle during the past five years. Major firms that sought independence from — and bypass of — carriers a few years ago are now looking for vendors to manage their networks for them.

Taking the reins

Right after the breakup, "the end user had to grab more control" of the network, "because he no longer had mother to solve his problems for him," said Frank Dzubeck, president of Washington, D.C.-based consulting firm Communications Network Architects, Inc.

But now that networks are becoming increasingly complex and are combining many vendors' services and equipment, "You have to do your homework and know where everything is, be able to manage it and do your own fault isolation," said Dennis Murphy, director of telecommunications at Warner Communications, Inc.

Warner has avoided this situation so far by sticking with a basic network but is now considering a more sophisticated solution that may well push it into the arms of "someone like AT&T" or a systems integrator that can take over the difficult job of managing the network, Murphy said.

AT&T is attempting to lure corporations back into its lap through special deals such as Tariffs 12 and 15.

Under Tariff 15, AT&T can provide price breaks to major customers; under Tariff 12, it can combine services, equipment and network management into tailored packages. Companies such as American Airlines, General Electric Co. and Ford Motor Co. have bought such packages.

But some communications managers are nervous about giving back AT&T so much power, particularly because the Federal Communications Commission is still evaluating Tariffs 12 and 15.

AT&T might tell top management, "We'll save you $36 million a year off the top with no loss in service," said W. Edward Hodgson, a manager of computers and communications at Westinghouse Electric Corp., which is currently negotiating such a deal with the carrier. "They take your network away from you, and then the FCC decides they have to charge what everyone else does, and you're stuck."

Several communications managers echoed Hodgson's view that the FCC is not taking a strong enough line with AT&T and the divested Bell operating companies.

"The mood of the country is toward further deregulation. But when the right thing to do is known, it's sometimes better to have a regulated environment," said John Saccente, director of telecommunications at Tenneco, Inc.

Going your own way

Saccente and other users said they wanted an authority such as the FCC to ensure uniform availability and pricing of services offered by the Bell operating companies. Right now, "each BOC is going its own way," Saccente said.

Managers praised AT&T divestiture-related regulations that have opened up the long-distance market to competition, giving them a greater choice of providers and services and a stronger bargaining position.

When it came to further deregulation of the Bell operating companies, however, Westinghouse's Hodgson expressed the general view, "I would like to see them offer more [communications] services, such as voice mail, but I don't want them to spend my money to buy new businesses that have nothing to do with my communications needs."

A long, hard road

Key dates in the history of the Bell System breakup

Nov. 20, 1974	The U.S. Department of Justice sues AT&T, alleging monopolistic actions
Jan. 15, 1981	An 11-month antitrust trial begins
Jan. 8, 1982	AT&T and the Justice Department announce a negotiated settlement
Aug. 24, 1982	U.S. District Judge Harold H. Greene approves the Modified Final Judgment
Feb. 28, 1983	The U.S. Supreme Court affirms Greene's decree
Jan. 1, 1984	The divestiture decree takes effect and implementation begins
Feb. 2, 1987	The Justice Department, in a triennial review, recommends that Greene relax the line-of-business restrictions
Sept. 10, 1987	Greene permits the regional Bell holding companies to transmit information services and provide gateways

CW CHART

Breaking up

FROM PAGE 1

ed effort to build digital, fiber-optic networks to attract those sophisticated users, according to Henry Geller, director of the Washington Center for Public Policy Research.

Sprint's huge investment in a fiber-optic network "forced AT&T to modernize much more rapidly than they otherwise would," said Herschel Shosteck, a telecommunications consultant in Silver Spring, Md.

Nevertheless, AT&T's share of the long-distance market has declined from about 84% in 1984 to 68.8% in mid-1988, according to Federal Communications Commission data.

Another result of divestiture was that it allowed AT&T to enter the computer business. AT&T entered the computer field in 1984 with its 3B2 line of minicomputers and several personal computers. But it fared poorly and in 1986 alone reportedly lost $1.2 billion from its computer operations.

While AT&T's computer fortunes are beginning to look up, "they've gone down a painful learning curve and are beginning to emerge from that," said Peter Winder, vice-president of the San Francisco Consulting Group, Inc., a telecommunications consulting firm.

The regional holding companies experienced a similarly painful learning curve with their efforts to diversify into unregulated businesses, Winder said. After a few fiascos, such as Ameritech's ill-fated purchase of software vendor Applied Data Research, Inc., the Bell companies are maturing and sticking closer to telecommunications, he added.

Meanwhile, the Bell holding companies are lobbying to free themselves from the Modified Final Judgment's prohibition on entering the long-distance, manufacturing and information service businesses.

FILE PHOTO
Greene in 1978

In the first triennial review of the decree, Judge Greene loosened the restriction on information services to allow the Bell companies to provide transmission and gateway services, but the Bell companies are clamoring for more freedom [CW, Nov. 21].

The major thrust of the lobbying effort is to get Congress to either relax some of the restrictions or remove administration of the decree from Greene and hand it over to the deregulation-minded FCC.

"But I think that effort will fail," said Alan Pearce, president of Information Age Economics, Inc., a telecommunications research firm in Bethesda, Md. "A bill may be introduced in the 101st Congress, but I would bet money that it won't pass."

The mood on Capitol Hill, Pearce said, is to wait for the second triennial review in 1990; then, if displeased with the outcome, Congress may act.

For the second triennial review, the Justice Department is scheduled to file its report Jan. 1, 1990; Greene will then consider the recommended changes and respond in late 1990 or early 1991, Pearce said.

However, that timetable may be thrown off, because the Justice Department reportedly is seeking a delay so it can file its report in September 1990.

Pearce predicted Greene will lift the restriction on equipment manufacturing, which will release the pressure for legislation, perhaps loosen the restriction on information services and retain the ban on long-distance service.

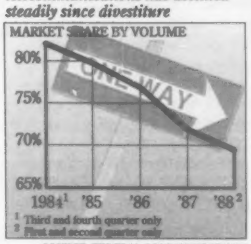
Because the Bell companies still have monopoly control over the local exchange, they could dominate short-mileage markets and drive long-distance companies out of business, Pearce explained: "The long-distance restriction will be the last to fall."

For this reason, in his recent speech, Greene again put the Bell companies on notice that he will not remove any of the remaining restrictions while the companies have monopoly control over the local network.

Greene said the telecommunications industry has a bright future ahead so long as it is permitted to operate without domination by monopolies. "As far as my court is concerned, that is precisely what our course will be — steady as she goes."

One-way only

AT&T's share of interstate telecommunications has declined steadily since divestiture



SOURCE: FEDERAL COMMUNICATIONS COMMISSION

AS/400 hits on all cylinders

BY ROSEMARY HAMILTON and JAMES DALY
CW STAFF

IBM recently sailed past the 25,000-unit mark for AS/400 shipments, a tremendous showing for the first three months of a product's life.

And it looks like IBM is just warming up: ADM, Inc., a research firm, recently predicted that 7,000 more units may ship before the end of the year.

In posting the early victory, IBM provided a textbook business-school lesson in sales acumen. The rapid deployment of Application System/400s was not only the result of providing a salivating base of System/36 and 38 customers with a long-desired power and memory upgrade but also was fueled by the AS/400's ability to steal customers away from other vendors.

> IBM HAS provided a textbook business-school lesson in sales acumen with the AS/400.

Additionally, the announcement provided a launchpad to position the AS/400 as a dominant force in the overall mid-range market. "There's a tendency to think of [the AS/400] as a bigger or better System/38, something for just those folks," said David Andrews, president of Cheshire, Conn.-based ADM. "But a lot of capabilities coming down the line — artificial intelligence, optical storage, voice integration — will be put on this platform."

IBM has gotten off to a good start in achieving that goal, putting together a well-oiled machine before pushing the Start button. It carefully crafted the product introduction, making it a big enough news event to warrant network news coverage. It also kept the industry's awareness high with an advertising blitz.

The results so far have been impressive and should remain healthy: Cambridge, Mass.-based Forrester Research, Inc. has said AS/400 shipments in 1989 should reach 38,000.

IBM has also worked closely with users in designing the product, lining up hundreds of software developers before the announcement instead of presenting the industry with a near-softwareless system — as the firm did with the 9370.

Michael Stombaugh, DP manager at Remington Freight Lines, Inc. in Remington, Ind., claimed this as a primary reason for abandoning a Digital Equipment Corp. VAX-11/750 and purchasing an AS/400 Model B30."DEC doesn't court our industry," he said, adding that IBM provided the dispatching-industry software that DEC lacked.

Conquest sales

IBM claims to have already captured several thousand users — one-third of the 25,000 shipped — from outside the System/36 and 38 community.

But John Logan, executive vice-president at the Boston-based Aberdeen Group research firm, cautioned that the 8,000 sales do not strictly represent IBM's marketing power. Logan said more than half those sales came from users who were ready and waiting for a new IBM mid-range machine anyway.

Michael Holycross, DP manager at Acusport Corp. in Bellefontaine, Ohio, managed an HP 300048 but converted to an AS/400 Model B50 last month.

"HP had their newer machines coming out, but we were skeptical," Holycross said. "We're looking into the future and felt that IBM had more to offer than HP."

Building momentum among non-System/36 or 38 users is critical for IBM, because by mid-1989 these ready-and-waiting users should be satisfied and the real sales effort must begin in earnest, Logan said.

DEC to mix systems

Integrating RDB, VMS in effort to catch IBM

BY STANLEY GIBSON
CW STAFF

For once, IBM has it now and DEC is moving to offer the same.

Digital Equipment Corp. is working to integrate its RDB relational database with its VMS operating system, according to Victoria Farrell, DEC's database marketing manager.

In tying its proprietary relational database management system to its proprietary operating system, DEC is following IBM's lead, imitating IBM's Application System/400, which includes a built-in relational database management system with its operating system. The strategy is also parallel to that of IBM in linking its DB2 DBMS with its Enterprise Systems Architecture. The move could change the rules of the game in the VAX software market.

Following footsteps

"DEC could do with RDB what IBM did with DB2," said John Birch, director of mid-range development at McCormack & Dodge Corp., an application software firm in Natick, Mass.

"It allows you to make changes to other products dependent on RDB," Birch said. "It allows you to take the functions in software and put them in hardware."

Meanwhile, the AS/400, which is experiencing strong early sales (see story at left), is emerging as a competitive threat. "The AS/400 has made built-in relational database a requirement in the mid-range," said David Andrews, president of ADM, Inc., an AS/400 consulting firm in Cheshire, Conn.

"As long as RDB remains a layered product outside of the operating system, it will never be as efficient" as an integrated DBMS, Birch said.

> "DEC COULD do with RDB what IBM did with DB2."
>
> JOHN BIRCH
> M&D

Already, DEC has reportedly begun bundling a runtime license of RDB with VMS in France, although DEC would not confirm the reports. The runtime RDB does not allow for development work, only program execution, said Terry Shannon, a DEC analyst at International Data Corp. in Framingham, Mass. "They could bundle runtime RDB any time. That's just a marketing decision."

Fully integrating RDB with VMS could be the next step, and a hardware implementation of RDB could follow, Farrell said.

Independent software vendors such as Relational Technology, Inc. are anticipating DEC's moves, concentrating on offering tools to work with RDB.

Robert Healy, vice-president at Relational , whose Ingres relational database is widely used on VAXs, offered, "Hardware vendors think that by owning the data and communications, they will have account control. DEC sees IBM doing that and would like to emulate it."

Same boat

Meanwhile, Cullinet Software, Inc. could face the same problem with DEC and RDB as it faced with IBM and DB2. When IBM introduced DB2, it ate heavily into Cullinet database sales.

However, Cullinet, like Relational, is stressing a tools strategy featuring its Enterprise line of development software.

A Cullinet user — Ivan Rodriguez, who is assistant director of systems and telecommunications services for Metropolitan Dade County in Florida — said that although he does not now believe that RDB is superior to Cullinet's Enterprise:DB, if it were improved, he might consider using it. However, he said he will continue to use his Cullinet Enterprise tools.

Another DEC user said he would be interested in a combined RDB and VMS, but only if it offered improved performance over other products.

"If it were bundled with the operating system, then we would certainly experiment with it," said Timothy Kahn, MIS manager at Sonoco Fibre Drum, Inc. in Marietta, Ga. Given that a future hardware implementation of RDB would offer considerably improved performance over RMS, he said, "we would definitely look at it."

VAX 8600s

FROM PAGE 1

Grinnell Mutual Reinsurance Co. in Grinnell, Iowa, which uses two 8650s and three 6200s. "The [high-end VAX] 8800 series is just too expensive for us to justify going to."

Others noted that they first heard the death knell for the two models when DEC began to hype the dual-bus VAXBI architecture of their newer models over the 8600's and 8650's Unibus-based system. "Even when we started leasing our 8600, we knew it wasn't the latest and greatest technology," another user said. "Besides, I can't get mad at DEC for changing products. I like to see a vendor stay up to date."

There are more than 5,300 VAX 8600 and 8650 systems installed in the U.S., according to Computer Intelligence, a La Jolla, Calif.-based research firm.

Closed gap

When the 8500 was announced in late 1984, DEC clearly needed to play catch-up in its long-standing superminicomputer war with rivals like Data General Corp. and Prime Computer, Inc. The machine went a long way in closing the price/performance gap, said sources familiar with the VAX line.

When the 8650 was announced a year later, DEC claimed the machine could be clustered to match the performance of IBM's largest mainframes.

But the two models never had much of a shelf life. The slow decline of the 8600 and 8650 began as long ago as early 1987, when the word drifted out of Maynard that DEC would not promote the old models as aggressively as the newer VAX 8530 and 8550 because the newer models offered better price/performance ratios.

The 8600 line has also come under low-end pressure from the Microvax 3600, which offers a 3-MIPS performance rate and is less than half the price of the 8600.

Additionally, other vendors have turned up the heat on the 8600 and 8650. The 8600 and 8650 "are going head-to-head with Hewlett-Packard and losing very badly because they're so much more expensive per MIPS," said John Logan, executive vice-president with Boston-based Aberdeen Group, a market research firm. "The machines have simply reached the end of the line."

While the 8600 and 8650 slip away next year, DEC is expected to announce a series of workstations in 1989, beginning with the so-called single-user PVAX system Jan. 10 [CW, Dec. 5].

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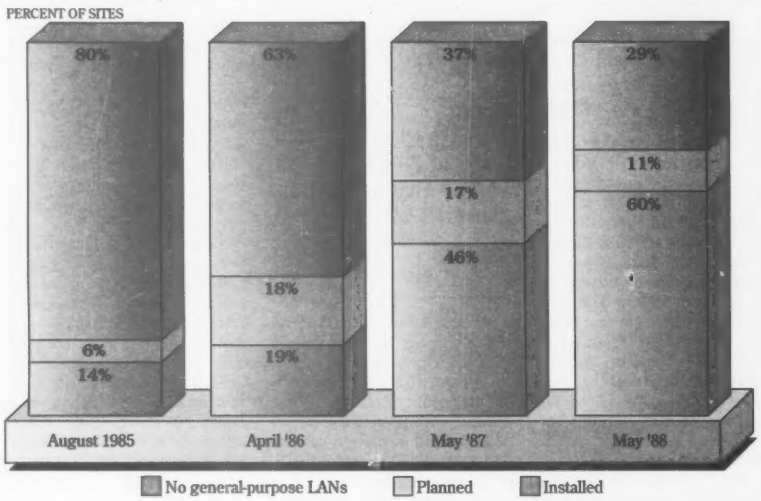
TRENDS

Networking at DEC VAX sites

DEC VAX sites stepping up use of general-purpose LANs



Need any convincing that local-area networks are selling like hotcakes to the mid-range systems market? Just take a quick hand-count at Digital Equipment Corp. VAX user sites, where LAN use has more than quadrupled in the past three years.

According to recent surveys by Computer Intelligence, a La Jolla, Calif.-based market research firm, 60% of VAX sites have a LAN installed, with another 11% planning to install one. In the summer of 1985, only 14% of VAX sites could make that claim.

"I think the driving force behind this has been DEC's commitment to LAN technology," said Bruce Coughran, a Computer Intelligence researcher.

Coughran added that DEC has made a point of emphasizing the use of Ethernet LAN technology to maximize the benefits of its big iron and that its users have apparently taken the advice to heart.

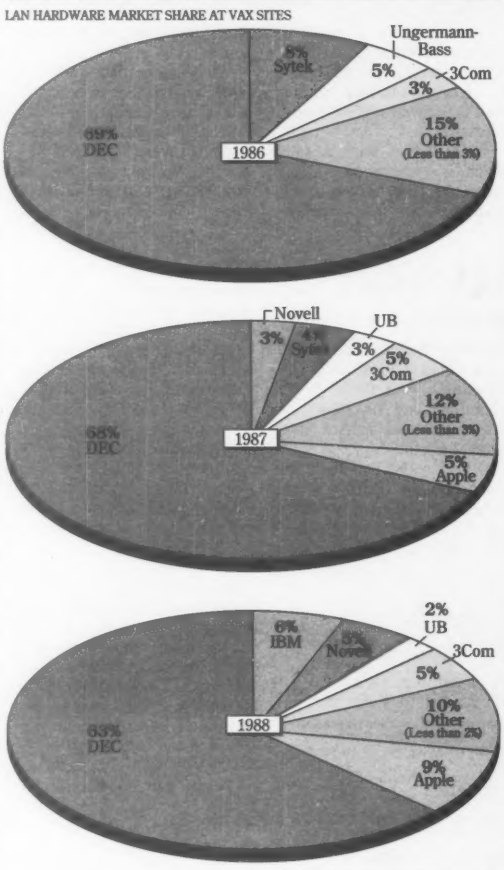
Maynard, Mass.-based DEC has also performed an admirable job of selling DEC LANs to its customers.

Sixty-three percent of VAX sites opt for a DEC LAN, with the nearest competitor — Apple Computer, Inc. — able to muster only a 9% showing.

Still, DEC's LAN penetration into the VAX market has slid from what it was two years ago, reflecting the pressure that LAN products such as Apple's Appletalk have put on the market.

JAMES DALY

DEC holds its ground in expanding field



SOURCE: COMPUTER INTELLIGENCE
CW CHARTS

INSIDE LINES

Reach out and bite someone. Having recently suffered a disastrous severance of its East Coast fiber-optic cable system, AT&T is making sure the same thing doesn't happen to TAT8, the transatlantic fiber-optic cable that went live last week. The big threat at sea is sharks, which for some unknown reason find fiber-optic cable extraordinarily toothsome. So AT&T had its research and development subsidiary, Bell Laboratories, develop Fishbite-Protection cable, which now protects TAT8 in shark-infested waters.

Programmer turned gumshoe. A programmer at Lawrence Livermore National Laboratories recently discovered that a hacker had ransacked files on five computers there; the programmer did a bit of detective work to find the intruder. He reportedly called around and hit on a likely suspect. Problem is, he neglected to alert federal authorities of his findings. A source said that outraged FBI agents spent a couple of days at the esteemed lab, wanting to know why they hadn't been called in on the case. The G-men believe that computer researchers at Livermore may have tried to cut a deal with the hacker to get him to stop the electronic break-ins rather than have him arrested.

Ship arrives month early. Although DEC's formal announcement of Decwindows is reportedly slated for Jan. 10, it turns out that DEC is already shipping the product. The much-discussed graphical user interface is offered with Ultrix-32 Version 3.0, which was announced in August and began shipping this month.

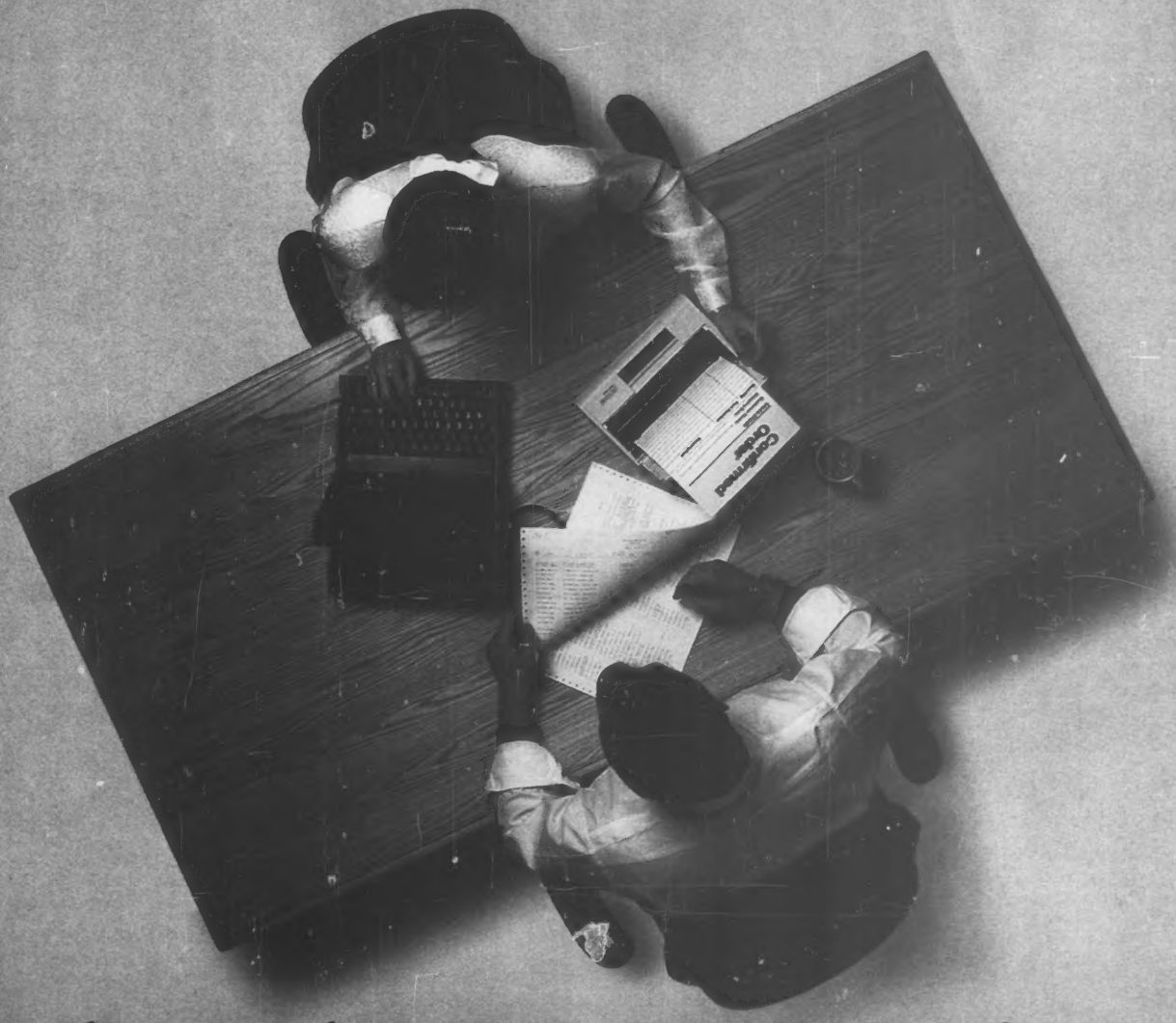
Greased skids. Amdahl said it would ship its new 6100 storage device by year's end, and it looks like it will meet that deadline. The 6100, which the company said is more of a storage processor than a controller because of the additional intelligence built into the system, is designed to compete with the IBM 3880. Another 6100 model, expected out in late 1989, is designed to compete with the newer IBM storage controller, the 3990.

Meanwhile . . . Amdahl competitor National Advanced Systems plans to announce by year's end a fourth-quarter 1989 availability date for IBM Enterprise Systems Architecture (ESA) compatibility. Amdahl announced a similar availability date in September. Both plug-compatible manufacturers are re-engineering several processor cards so that their mainframes can accommodate IBM's new MVS/ESA operating system.

OS/2 and you. Microsoft finished its first versions of OS/2 and the Presentation Manager and is now busy on the second, which will eliminate the annoying eight-character limitation on file names. Microsoft is also considering adding some object-oriented features to the Presentation Manager and Microsoft's C language, but no timetable has been announced. Also, IBM has begun demonstrating complex instruction set computing running under OS/2. With this technology, shops can potentially turn OS/2 into a multiuser system aimed at transaction processing. Also on tap is a 32-bit version of OS/2, but our sources indicate that users may have to wait until 1990.

We want to be like CA when we grow up. The recently proposed merger of Morino Associates and Duquesne Systems is "just the beginning," according to Mario Marino, chief executive officer of Morino and chairman of the new company. "Expect to see the new company be very aggressive in growth," he told an audience last week at the firm's user conference. Morino acknowledged that he has discussed possible mergers with other firms and had extended an offer to BGS Systems, another IBM mainframe systems software vendor, but was turned down. However, rumors persist of a possible relationship with either BGS or privately held Candle Corp.

Have a wonderful holiday and be careful you don't spill champagne on the disk drive at your office party. CW's annual Forecast double issue is next week, so we'll take a breather. We will still be manning the holiday hot line, however. Give News Editor Pete Bartolik a call at 800-343-6474 or, if you're in Massachusetts, 508-879-0700.



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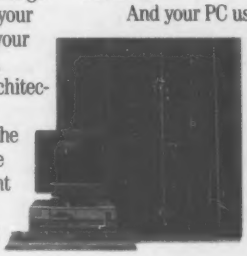

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